THE FAMILY PHYSICIAN

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THE

FAMILY PHYSICIAN

A Manual of Domestic Medicine

NEW AND ENLARGED EDITION

VOL. IV

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SIR JAMES PAGET, BART., F.R.C.S.

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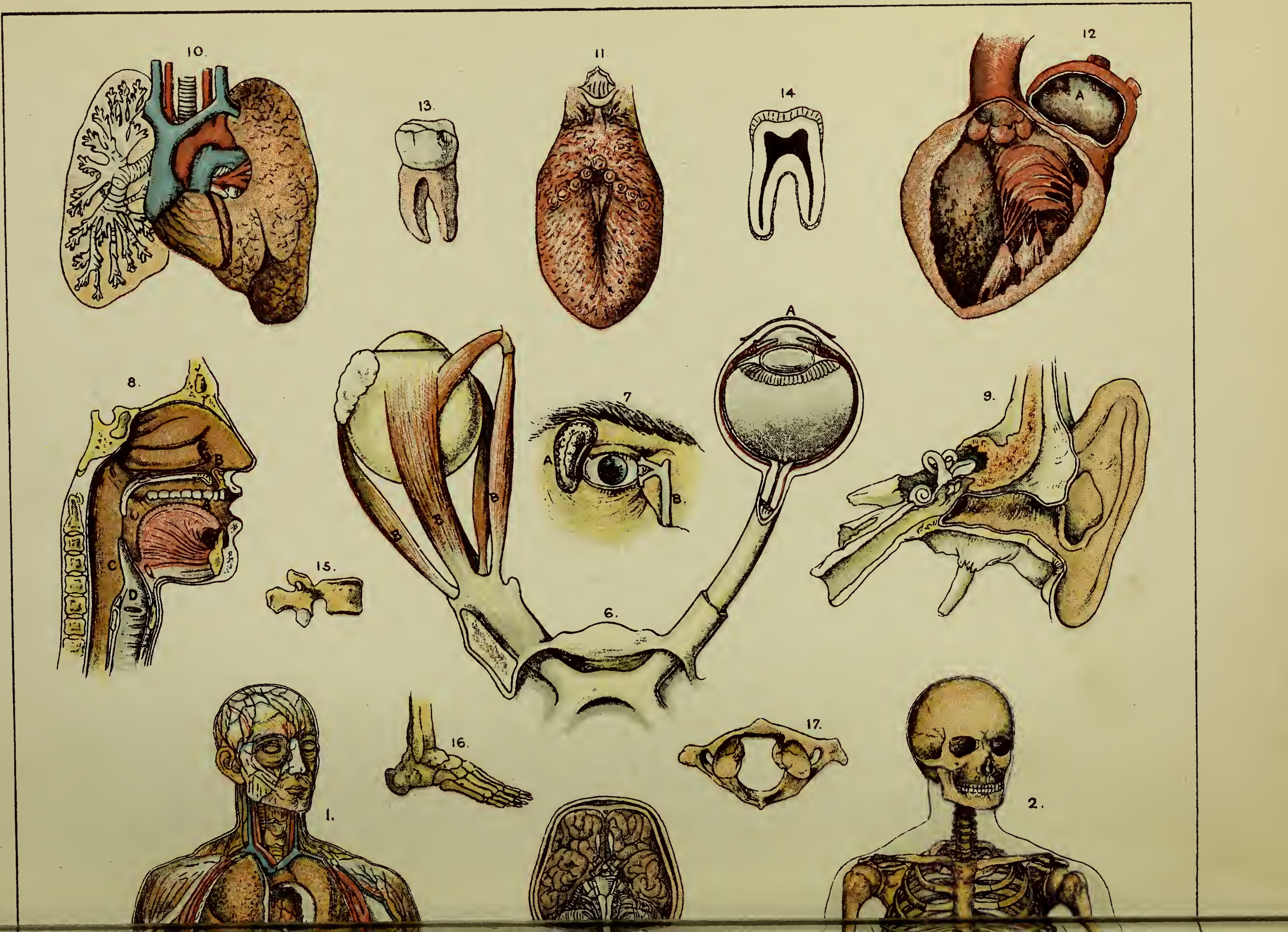
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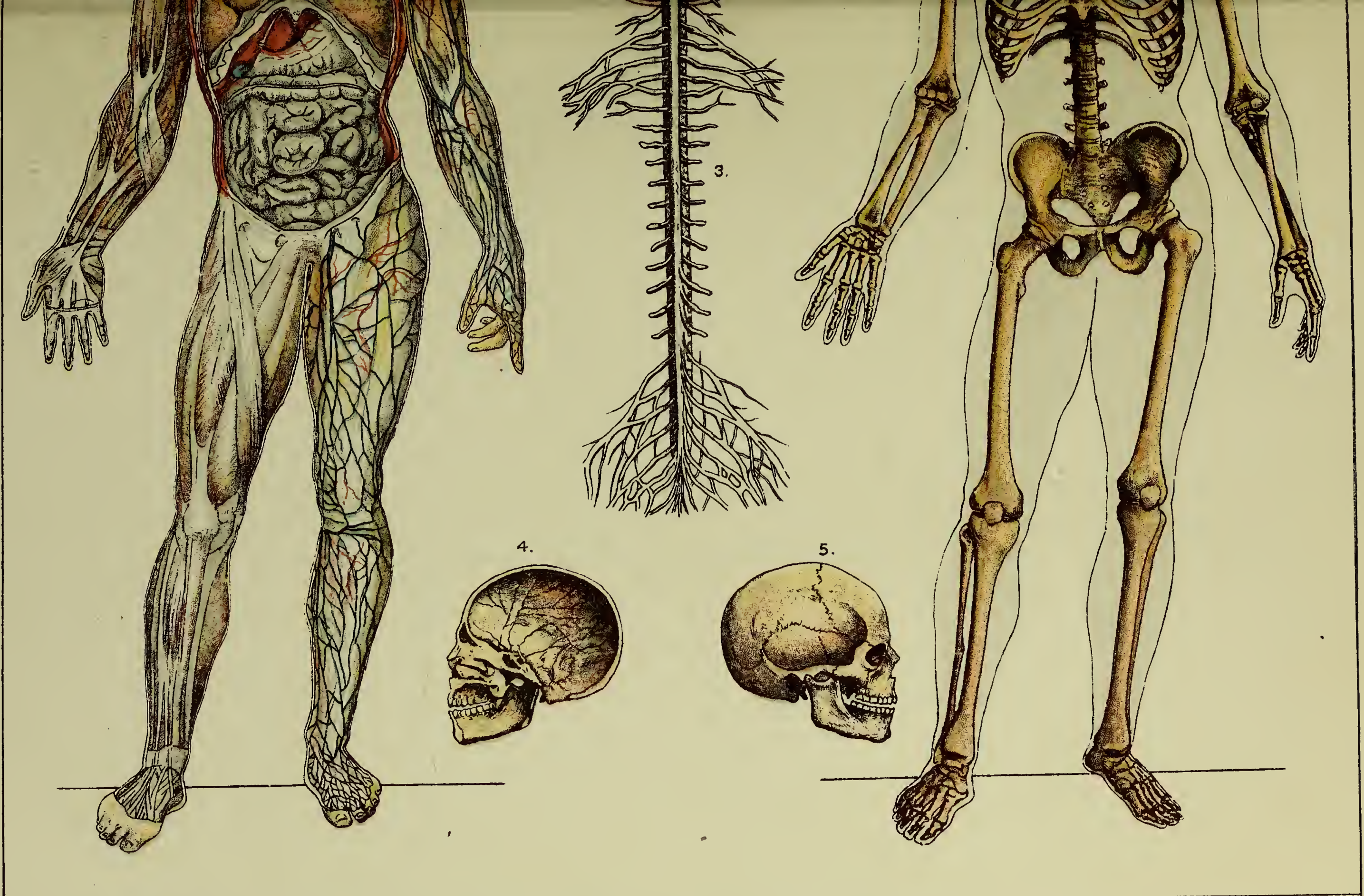

1. THE HUMAN BODY WITH THE ANTERIOR WALLS OF THE CHEST AND ABDOMEN REMOVED. IN THE LEFT ARM AND LEG THE SUPERFICIAL VEINS ARE SEEN; IN THE RIGHT ARM AND LEG THE DISSECTION HAS BEEN CARRIED FURTHER SO AS TO EXPOSE THE MUSCLES.
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PHYSIOLOGY.

Vincent Brooks Day & Son, Lith.

THE
FAMILY PHYSICIAN.

XXI.—MATERIA MEDICA (*continued*).

ACTÆA RACEMOSA.—(*See* CIMICIFUGA.)

ALUM.—In the preparation of alum, finely divided clay, which has been recently roasted, is mixed with half its weight of oil of vitriol, and heated for three or four days. The alum is then dissolved out of the mass, and, after being freed from iron and other impurities, is ready for use.

It forms transparent, white, regular eight-sided crystals, which, by slowly evaporating a concentrated solution, may be made to attain a large size. A group of octahedral crystals of alum usually forms one of the stock show specimens of the chemist's window. The taste of alum is acid, sweetish, and somewhat astringent. When strongly heated it fuses, and the water of crystallisation being driven off, forms a light, spongy mass, which is known as dried alum.

Alum is a powerful styptic, and as such is commonly employed to stop bleeding. It has this great advantage over other substances used for a similar purpose, that it is always at hand, there being few households in which alum is not to be found. To check the bleeding from piles, leech bites, or slight cuts, the part should be first wiped dry, and then dusted over with powdered alum. Bleeding from the gums may be checked by dissolving alum in cold water, and then holding it in the mouth until it has had time to exert its astringent action. Bleeding from the nose is often quickly arrested by using powdered alum as a snuff. In bleeding from the stomach or lungs alum is also useful. In these cases there is usually no time to weigh out or measure the salt. A spoonful may be thrown into a glass of water, and the liquid tossed off as soon as any of the alum has been dissolved.

Another example of the application of the astringent properties of alum is afforded by its use in relaxed sore throats. The alum gargle (Pr. 81) should be used at least three times or four times daily.

Many people suffer from indigestion, flatulence, and constipation from the use of bread adulterated with alum. Not only does it produce these symptoms, but it lessens the nutritive value of the bread by combining with the phosphoric acid and rendering it insoluble. It is prejudicial to the consumer in another way, for it permits the substitution of an inferior flour for a good one. It is probable that alum is not so largely employed by bakers as formerly, but in some cases as much as forty grains have been detected in a four pound loaf. It may be mentioned that the addition of alum to bread is forbidden by law.

Dried alum applied several times a day will quickly heal ulcers of the gums occurring in children.

Alum has long been highly esteemed as a remedy for whooping cough. It is useful only in uncomplicated cases—in cases, that is, in which the patient is not feverish, and in which there is no chest mischief, and no irritation as the result of teething. In cases of this description it rapidly reduces the number and severity of the fits, and in a few days effects a cure. Alum also proves extremely useful in the spasmodic cough that often remains after the disappearance of whooping cough. For children alum should be dissolved in a little water, and given in six-grain doses every three hours, or a smaller dose may be given more frequently. The addition of a little simple syrup to the mixture serves to make it more palatable.

In ozœna or " stink nose," irrigating or washing out the nose with a lotion made by dissolving a tea-spoonful of alum in a pint of water often proves extremely useful.

The ordinary dose of alum for an adult is from ten to twenty grains. In larger doses it acts as a purgative. The dried alum is for external use only.

ALOES.—There are several varieties of aloes, of which the most valued are the Barbadoes and Socotrine. The plant yielding Socotrine aloes is a native of the Cape of Good Hope and the Island of Socotora; but it is now commonly cultivated in the West Indies. It has, when fully grown, a stem three or four feet high, usually terminating in a cluster of leaves, each of which, some foot or more in length, is shaped like a sword, sharply pointed at the apex, and coarsely jagged at the margins. The flowers are red, tipped with green, and are borne in clusters on long stalks which rise erect from among the leaves. The plant yielding the Barbadoes aloes has yellow flowers, arranged in an elegant loose spike. These plants are very readily cultivated artificially, and being incapable of parting rapidly with water, flourish well in pots filled with lime rubbish mixed with a little ordinary soil. They will thrive in any ordinary greenhouse the temperature of which in winter can be kept constantly at or above 40°. In summer no artificial heat is required, but they must be abundantly supplied with water, although in winter, when not in a state of activity, they do better without any. Specimens are frequently brought to London from the West Indies by sailors, who, for convenience of transport, cut off the top of the stem, tying tightly over it a tarred cloth, to prevent the escape of the juices. If suspended by a cord from the ceiling of a room, these plants, even when so mutilated, will continue to live for years, throwing out after a time a fresh crop of leaves.

BARBADOES ALOES.

There are several processes adopted for preparing the drug, differing, however, only in detail. Usually the leaves are cut off near their bases, and thrown with their severed end downwards into a tub or bucket, when the juice which they contain rapidly exudes.

When a sufficient quantity has been collected it is allowed to evaporate in the sun until it becomes consistent, when it is poured into the gourds in which it is imported.

Bardadoes aloes as ordinarily met with in the shops occurs in yellowish-brown or dark brown opaque masses, having a bitter nauseous taste, and a strong, heavy, disagreeable odour. The smell of Socotrine aloes is fruity and far less disagreeable.

The active principle of aloes is alöin. It is a beautiful yellow crystalline substance free from odour, having the characteristic taste of aloes, and being very sparingly soluble in water. The ordinary laxative dose of this substance is from a half to two grains.

Aloes is employed chiefly for its purgative properties, its effects being exerted mainly on the lower bowel. It produces bulky motions, a little softened, but not watery. Its action is slow, and six, twelve, or even twenty-four hours may elapse before it operates. There are several forms in which it may be conveniently administered, the compound decoction of aloes—or "baume de vie," balm of life, as it is sometimes called—being as good as any. It is composed of Socotrine aloes, myrrh, saffron, extract of liquorice, compound tincture of cardamoms, carbonate of potash, and water, and is given in three or four table-spoonful doses. Aloes is well suited for cases of habitual costiveness, for constant use does not lessen its activity, and sometimes even the dose may be gradually decreased. Pr. 64 is an excellent pill for cases of chronic constipation.

The Anticonstipation tabloids contain one-fifth of a grain of Alöin, one-eighth of a grain of extract of belladonna, one-sixteenth of a grain of powdered ipecacuanha, and one-sixteenth of a grain of strychnine. This may be obtained either coated or uncoated. They are laxative, but not purgative in action. In obstinate cases of constipation one may be taken at bedtime and one in the morning before breakfast.

The extract of aloes is a constituent of the "dinner pill" (Pr. 65), so frequently taken by people preparatory to over-gorging themselves. An old gentleman is going to a big City dinner, and knowing that he is incapable of resisting the temptation to eat and drink more than is good for him, and that he will assuredly suffer for it the next morning, he takes time by the forelock, and treats his complaint before acquiring it. The pill may even enable him to eat another plate of turtle, or dispose of an extra glass or two of hock or Madeira. Aloes in combination with iron is often used in cases in which the periods have from any cause been suppressed. The "aloes and iron pill" is an official preparation.

Aloes and rhubarb are the chief constituents of Holloway's pills, the formula for which is as follows. Aloes sixty-two grains, rhubarb twenty-seven grains, saffron three grains, Glauber's salt three grains, and pepper seven grains, to make one hundred and forty-four pills. It is hardly necessary to say, therefore, that they are ordinary purgative pills, and that they contain no ingredient which is not perfectly familiar to the majority of people.

AMMONIA.—(*See* SAL VOLATILE.)

ANTIPYRIN and ANTIFEBRIN. — These substances being closely allied in action and uses may be conveniently considered together.

Antipyrin is a drug which in a few years attained a very large sale. It is an artificially prepared alkaloid, and its full title is Dimethylphenylpyrazolon. As considerable difficulty was experienced in pronouncing a word of these dimensions, it was decided to call it antipyrin as an indication that it possessed antipyretic properties. This word, however, is not universally used, for in France it is called Analgesin, and in the British Pharmacopœia it is known as Phenazone. The diversity of names is unfortunate, and is apt to lead to confusion.

It is a pearly-white crystalline substance freely soluble in water.

When first introduced it was employed chiefly for the reduction of the temperature in cases of typhoid fever, inflammation of the lungs, and other acute diseases. In this particular respect it has not maintained its early reputation.

For some years past it has been employed very extensively for the relief of pain, and has been used in cases of neuralgia, headache, lumbago, sciatica, and colic. In these distressing affections it undoubtedly often does much good. Many people are so convinced of its utility that they fly to it on the slightest provocation.

During the last influenza epidemic it was taken almost wholesale, and often without the slightest discrimination. It has been lauded as a remedy for sea-sickness, and many people take one or more doses before starting on a sea voyage.

It is by no means the innocent remedy that many people suppose, and is capable of producing very disagreeable, not to say dangerous symptoms. After prolonged use it gives rise to loss of memory, confusion of ideas, and deafness. The breathing is often greatly accelerated and the patient suffers from blueness of the face and extremities. It may bring out a rash on the skin which gradually extends over the whole body.

It is a drug which should be taken with considerable caution, and only under skilled advice. It is possible that many of the disagreeable consequences to which reference has been made may be due in part to the use of an impure specimen of the drug.

The dose is from five to fifteen grains, and is best administered in the form of the tabloids which contain five grains in each.

Antifebrin is prepared artificially from Aniline. Its technical name is Phenylacetamide, and it is known in the Pharmacopœia as Acetanalide. It differs from antipyrin in being almost insoluble in cold water. In other respects, however, it has much the same action. It has been employed for the reduction of temperature in high fevers, but is now comparatively rarely employed for this purpose.

It relieves pains of all kinds, especially the pains referable to affections of the large nerves. It cannot be employed with impunity, as not uncommonly it gives rise to distressing and even dangerous symptoms, such as giddiness, singing in the ears, and throbbing of the temples.

The dose is from two to six grains three times a day, and it is best given in the form of the tabloids which contain two grains in each.

APOMORPHINE.—Apomorphine is one of the most useful drugs in the British Pharmacopœia.

It is an alkaloid derived from morphine. It is not contained in opium, but is made artificially by the action of hydrochloric acid on morphine or on codeine.

It possesses no narcotic properties, and is never given for the purpose of allaying pain or producing sleep.

When given hypodermically it acts as an emetic. It is the most powerful emetic known. When five drops of the Injectio Apomorphinæ Hypodermica are injected under the skin the patient evacuates the contents of his stomach in an incredibly short space of time. He vomits, and nothing can resist its action. It is most useful in cases of poisoning, and for the removal of foreign bodies in the windpipe.

When given by the mouth it acts as an expectorant and not as an emetic. The patient does not vomit but evacuates the mucus which has accumulated in his lungs and bronchial tubes. It produces no depression and may be given with perfect safety even to young children.

Given by the mouth it is useful in phthisis, winter cough, chronic bronchitis, and asthma. It may be added in from five to ten drops of the solution of the Pharmacopœia to any cough mixture, and taken three or four times a day.

The solution on keeping undergoes a change in colour and becomes dark green, but this in no way impairs its efficacy. In the British Pharmacopœia it is stated that the solution must be freshly prepared, but this is a mistake, for it is just as efficacious after being kept a year as it was the day it was prepared.

It may be obtained in the form of tabloids each containing one-fiftieth of a grain. These are intended for internal administration, and may be taken with confidence. Many asthmatics and sufferers from winter cough take them all the year round, and derive the greatest confidence from their administration.

The points to remember are that apomorphine, although derived from morphine, is not allied to it in action; that it will not produce sleep or allay pain; that when given hypodermically it acts as an emetic, and that when swallowed it is the best expectorant known.

ARNICA.—Arnica (*Arnica montana*) is a plant somewhat resembling our common marigold, and growing abundantly in the northern parts of Europe. Its use is almost universal as an external application to bruises and swellings, resulting from blows, falls, or other forms of mechanical violence. It appears to exert a special or specific influence on the muscles. It is often administered internally in these cases. Many kinds of muscular pain arising from over-exertion in those who are unaccustomed to severe or prolonged physical exercise may be relieved by this drug. A common example of this pain is the "stitch in the side," resulting from prolonged walking or running. Many of these comparatively trivial complaints have a natural tendency to get well, but still in severe cases it will be found advantageous to resort to the use of arnica.

THE ARNICA PLANT.

In the preparation of the tincture, sometimes the whole plant is employed, and sometimes only the root. It is made with rectified spirit, and is of the strength of one part in twenty.

The mixture (Pr. 42) and lotion (Pr. 94) may be employed simultaneously.

ARSENIC.—The substance to which we ordinarily apply the term arsenic, or white arsenic, is in reality a combination of the metal with oxygen, and is known to the chemists as arsenious acid. It is prepared in Cornwall by roasting arsenical iron pyrites. It is a heavy white powder, very slightly soluble in water, or in any of the ordinary beverages. It is almost tasteless, for it has been frequently administered in all descriptions of food in fatal doses without being detected by the victim.

Arsenic, as is well known, is a powerful irritant poison, and on account of its freedom from colour and taste has long been a favourite with both murderers and suicides. It is stated, on good authority, that in India alone hundreds of people die annually from the secret administration of this substance. Fortunately, it is now far less readily procurable in this country than formerly. By the "Arsenic Act" it is provided that no arsenic shall be sold retail without being previously mixed with either soot or indigo, so that its presence in food may be readily detected. The prescriptions of medical men are by a special clause exempted from the restrictions imposed by this extremely salutary Act.

The most convenient form in which to administer arsenic for medicinal purposes—and arsenic is largely employed in the treatment of disease—is in the form of the arsenical, or, as it is sometimes called, Fowler's solution. This consists essentially of a solution of arsenious acid in carbonate of potash, coloured and flavoured with lavender. The arsenic tabloids (T. 7) contain in each the equivalent of one drop of this solution.

The symptoms produced by large doses of arsenic are very severe. The person soon after taking the poison experiences a feeling of faintness and depression, followed by sickness and an intense burning pain in the stomach. Vomiting is soon associated with purging, both being violent and incessant, and affording no relief. There is constant straining, and the evacuations are mixed with blood. There is a sense of constriction with a dry burning heat in the throat, accompanied by the most intense and agonising thirst, which nothing relieves. The skin is sometimes pungently hot, and at others cold and clammy. The patient is in excruciating pain, which is described as being like a fire raging within the body. There are severe cramps in the calves of the legs, and the breath is drawn with difficulty on account of the painful condition of the stomach. A state of insensibility usually supervenes, and the scene closes with paralysis, or death is ushered in by convulsions. The picture is a most horrible and painful one.

Curiously enough, very large doses of arsenic have been occasionally taken without causing death. A man wishing to commit suicide bought and swallowed two ounces of arsenic. The quantity was so large that it was immediately rejected, and the patient recovered with but little treatment.

In cases of slow poisoning by arsenic, the symptoms are much less pronounced. In addition to some of those already mentioned, there are usually inflammation of the eyes with an inability to bear the light, an eruption on the skin, and general debility and exhaustion.

There are many different ways in which arsenic may be introduced into the system. For instance, "emerald green," which is a compound of arsenic and copper, is usually found in children's paint-boxes, and is frequently used to colour sweets, and spread over confectionery. It is very largely used for making the various kinds of decorative papers which adorn the walls of our bedrooms and sitting-rooms. So extensively are these papers used that one London manufacturer alone, according to his own statement, at one time used never less than two tons of arsenic weekly. There is not the slightest doubt that living or sleeping in a room covered with arsenical paper produces upon many people the most pernicious effects. Even the workmen who hang these papers or remove them from the walls suffer from slow arsenic poisoning. Arsenic has been frequently detected in the dust on books, picture frames, and the furniture in rooms so papered. In Germany, the manufacture, sale, or use of these dangerous preparations was long ago prohibited under heavy penalties. Many cases of chronic illness or ill-health have been traced to the previously unsuspected presence of arsenic in the wall-paper.

The symptoms produced usually resemble those of a very bad cold. There are commonly dryness and irritation of the throat, smarting of the eyes, shortness of breath, languor, headache, loss of appetite, colicky pains, and irritability of the bowels. When the majority of these symptoms have been long present, and have resisted all ordinary treatment, it would be well to turn one's attention to the paper covering the walls of the room. The results of the investigation may prove negative, but still it is a point not to be neglected. It may seem a trifle, but a little thing like this may make all the difference between ill-health and good health, between misery and comfort.

We now pass on to the consideration of the subject of arsenic eating. After our statement that arsenic is a powerful irritant poison, the necessity for any such consideration may naturally excite surprise. In some parts of Lower Austria, however, in Styria, and especially in the hilly country towards Hungary, there prevails extensively amongst the country people an extraordinary custom of arsenic eating. The statement has been often affirmed, and as frequently denied, but the whole subject has been recently investigated by competent and trustworthy observers, and there can be now no question as to the correctness of the facts. The practice of eating arsenic, it appears, is of considerable antiquity. By many it is used daily through a long life, and the custom frequently becomes hereditary, and is handed down from father to son. The drug, we can hardly in these cases say poison, is known by the name of *hidri*, and is sold to the people by itinerant pedlars, and herbalists. It is consumed chiefly for two purposes, by the women to increase their charms, and by the men to improve their " wind," and enable them to climb the steep mountains without difficulty. It is said to give plumpness to the figure, clearness and softness to the skin, and beauty and freshness to the complexion. Fortunately there is no necessity for English women to take arsenic with this object. These young female arsenic eaters are described as being remarkable for their clear and blooming complexions, for full plump figures, and for a general appearance of health. Their temporary charms are, however, dearly purchased, for they frequently fall victims to their vanity, and die a painful death. The effect on the men is equally surprising. It not only makes them handsome, but considerably increases their physical strength. A small piece of arsenic is put in the mouth and allowed to dissolve very slowly. The effect is astonishing, the partaker feels at once invigorated, and easily and rapidly ascends mountains which he could not otherwise surmount without the greatest difficulty and distress of breathing. People in this country exhibit no inclination to climb mountains after taking a dose of arsenic.

The directions for arsenic eating are simple, but they are only applicable to Styrians. The quantity of arsenic taken by those who are beginning the practice varies with the age, sex, and condition, but never exceeds half a grain. The dose is taken on alternate days, in the morning before breakfast, until the patient becomes accustomed to it. The dose is cautiously increased as that previously taken loses its effects. No unpleasant symptoms are produced, it is said, if care is taken in the regulation of the dose. But if, after a time, from want of material, or other cause, the habit be discontinued, considerable distress is experienced, so that a return to the practice is necessitated. The habit never amounts to a passion like that of opium eating, and is not an intense pleasure which cannot be resisted, but nevertheless, when once acquired it is seldom abandoned.

It is well known that arsenic is frequently given to horses to improve the sleekness and condition of their coats. The custom is very prevalent in many parts of the Continent. A pinch is either sprinkled amongst the oats, or a piece the size of a pea is wrapped in linen, and tied to the bit before being put in the horse's mouth. It is stated that the practice may be continued for years without producing any injurious effect, but if the animal unfortunately comes under the care of one who is unacquainted with his arsenic proclivities, and fails to give him his daily quantum, he soon becomes low-spirited, and visibly declines in health and strength.

Arsenic made into a paste with starch or flour is frequently used for the destruction of large warts, and the removal of cancers and tumours of all kinds. The advertising "cancer curers," who profess to remove malignant tumours "without the use of the knife or caustic," usually employ arsenical paste for that purpose. It is a perfectly safe remedy in the hands of an experienced surgeon, but becomes a very dangerous weapon when entrusted to those who are ignorant of its properties and mode of manipulation. Many people have fallen victims to this treatment through the absorption of the arsenic into the system in quantities sufficiently large to destroy life. An untoward result such as this can occur only when certain well known precautions are neglected.

Internally arsenic is best given in the form of the tabloids or as the arsenic mixture (Pr. 40), the dose of the latter being a tea-spoonful every three or four hours.

Of course in the treatment of disease arsenic is given only in very small doses, and not the slightest fear or hesitation need be felt in using it in the manner here indicated. Each tea-spoonful of the above mixture contains about $\frac{1}{120}$th part of a grain, but this dose is, in most diseases, capable of effecting all that is possible by the use of arsenic.

This mixture should, as a rule, be given after meals, as when administered upon an empty stomach it is apt to induce nausea and irritate the bowels. Children above the age of five will take almost as large a dose of this medicine as adults. Itching or smarting of the eyes and puffiness of the lower eyelid are to be regarded as an indication that the dose is greater than is required, and it should be decreased, though it need not be discontinued.

Arsenic enjoys a high reputation in the treatment of *ague,* and should always be used when bark or quinine is not obtainable, or in cases in which they have been employed unsuccessfully. Arsenic has been used for ages by the Chinese in the treatment of this complaint. It was the active ingredient in a once popular quack medicine known as the "tasteless ague drop."

Arsenic is an excellent remedy in many diseases of the lungs. It frequently proves useful in asthma, a circumstance which we naturally associate with its use by the Styrians to improve the breathing. It often gives relief to people who, on catching the slightest cold, are troubled with wheezing at the chest, and difficulty of breathing, especially on exertion or at night, so that they have to be partially propped up in bed. It is especially indicated in these cases when there is an eruption on the skin, or when a skin disease has been recently cured. It proves least successful in these cases when they are associated with the expectoration of large quantities of phlegm.

There are many people who are seized every day, or even several times a day, with an attack of persistent sneezing, accompanied by profuse running from the eyes and nose, and sometimes accompanied by severe pain over the forehead. The sneezing is generally attended with itching of the nose, which may be confined to a small spot just inside the nostrils. Each attack may last for several hours, and the patient may have been subject to the complaint for years. Again, everyone knows people who are extremely liable to colds, and who when attacked suffer from severe and repeated fits of sneezing, accompanied by pain across the forehead, and a profuse watery discharge from the nostrils. Very frequently the cold spreads down into the chest, and the unfortunate sufferer has, in addition to his previous troubles, to complain of a sore throat, wheezing, and shortness of breath. In all these cases tea-spoonful doses of the arsenic mixture, given every hour, will prove useful. The attacks of sneezing, wheezing of the chest, and general embarrassment of breathing to which children who have recently recovered from bronchitis are often subject, are relieved by arsenic. The mixture should be given hourly in from ten to twenty drops every hour, according to age. This mixture proves also useful in hay fever.

Arsenic is frequently used in certain disorders of the stomach and digestive apparatus. In ulcer and cancer of the stomach it often proves successful in allaying the pain and checking the vomiting when every other remedy has proved useless. In that form of vomiting in which after almost every meal the food rises or regurgitates into the mouth and is vomited without pain, and with hardly any feeling of sickness, the arsenic mixture should be used. Tea-spoonful doses of this mixture, taken shortly before meals, will almost infallibly arrest the distressing vomiting of drunkards and others who indulge too freely in spirituous liquors. This form of vomiting is accompanied by great straining and distress, and usually occurs the first thing in the morning before breakfast. Generally very little, and sometimes nothing at all, is rejected, and then it is called "dry vomiting." The vomited matter is intensely bitter and sour, and of a green colour. We have indicated arsenic as a remedy for this condition, but a far more certain cure is afforded by the discontinuance of the habit on which it depends.

Arsenic always proves of service in that form of indigestion which is characterised by the following symptoms:—There is a nasty sinking in the pit of the stomach, which is promptly relieved by food, but immediately on eating anything the unfortunate sufferer is seized with an urgent desire to relieve the bowels, and is obliged to leave the table and his unfinished meal. This is repeated over and over again, the patient being reduced to a condition in comparison with which the sufferings of Tantalus must have been happiness itself. By a few days' use of the arsenic mixture, the interval between the meal and the evacuation becomes prolonged, and usually in about ten days the complaint is cured. One or two tea-spoonfuls of the mixture should be given shortly before each meal.

The arsenic mixture often proves useful in other obstinate forms of diarrhœa, and has been used with considerable success in cholera.

In many diseases of nervous origin arsenic proves of considerable value. In St. Vitus's dance especially, we may rely with confidence upon this remedy. It proves most successful in simple uncomplicated cases. Should there be any fever, this must be subdued by appropriate remedies, and should the patient be anæmic, the condition of the blood must be improved by iron in the manner already indicated. These complications being removed, the use of arsenic may be resorted to with confidence. Should the ordinary one or two tea-spoonful doses of the mixture not effect a cure, the quantity may, in this disease, be increased, even in children, to a table-spoonful three times a day.

The smaller doses often prove useful in neuralgia.

ATROPINE, THE ACTIVE PRINCIPLE OF BELLADONNA.—(*See* BELLADONNA.)

BARK AND QUININE.—Cinchona bark, the bark *par excellence,* is the plant from which we obtain our quinine. Many stories are told of the mode in which its properties were first discovered. By some it is said that an Indian was cured of an ague by drinking at a pool into which some cinchona trees had fallen. It may be so, although it is unfortunate that these trees never by any chance grow on the borders of lakes or ponds. By others it is related that the Indians observed that the American lions, when ill with ague, eat the cinchona bark. We are only surprised that these animals should not have extracted the active principle, instead of using the drug in its crude state.

Another story is that the Jesuits had noticed the extreme bitterness of the bark, and being of an enterprising disposition, had, with a self-denial which cannot be too highly commended, administered it without the slightest fear or hesitation to a brother of another order who happened to be ill. The treatment proved successful, and they received the credit which they so richly deserved. It would appear that bark was first introduced into Europe about the year 1632. It is usually stated that we are indebted to the Countess of Chinchon for the importation, and the drug from that circumstance acquired the name of "Cinchona bark," or "Countess's powder." As there appears to be some

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CINCHONA CALISAYA.

doubt as to which Countess of Chinchon is referred to, we take this opportunity of stating that the lady in question was the wife of Count Chinchon, Don Geroninio Fernandez de Cabrera Bobadella J. Mendoza.

After this explanation we proceed with the history of the drug. About ten years later it was carried by the Jesuits to Rome, and by them distributed among the members of their order, by whom it was taken to their respective stations, and used with great success in the treatment of agues. One of the most active in promoting its employment was Cardinal de Lugo, and in this way it acquired the names of "Jesuit's bark" or "Jesuit's powder," and "Pulvis Cardinal de Lugo." In time, however, it, like many another drug, fell into disuse, and its very existence appears to have been forgotten by most people. But not by everyone, for a few years later Sir Robert Talbot acquired a great reputation for the cure of ague by a secret remedy, which when purchased for a large sum by Louis XIV. turned out to be nothing more than our old friend the cinchona bark. From this time forth the drug was known in France as "Talbot's powder" or "the English remedy."

The genus yielding the bark has been divided into a large number of different species, twenty-one being enumerated by one botanist alone. Innumerable books, memoirs, and pamphlets have been written about these different species without anyone being a bit the wiser. It is now generally admitted, however, that there are three chief kinds of bark—the yellow, the pale, and the red. The different species of cinchona are natives of the Andes, growing chiefly on the eastern face of the Cordilleras. The cinchonas have been acclimatised in India, and of late years its cultivation has been so immensely extended that British India bids fair to compete at no distant period with Central and South America as a source of quinine. The cinchonas themselves seldom form an entire forest, but are collected into more or less compact groups, distributed in different parts of it, and sometimes even they grow separately. The characteristics of these forests are of a tropical nature. Palms are nearly always abundant, and in many parts form their chief feature. In addition, there are tree ferns, gigantic climbers, bamboos, plaintains, and other plants.

The men who cut the cinchona trees in the forest, and others who are employed in the same trade, are known as *cascarilleros*. They gather the bark all the year round except during the rainy season, which corresponds with our winter, when the process must be suspended on account of the physical obstacles to its continuance. A great deal of skill and practice are required on the part of the cascarillero to detect the presence of the cinchona trees in the dense forests. If the position be favourable the tops of the trees first attract his notice, a slight movement peculiar to the leaves of certain species, or a particular colour of the foliage, enabling him to distinguish the object of which he is in search from a distance of many miles. Very frequently the dry leaves found on the ground are sufficient to indicate the direction in which the search should be prosecuted. In order to strip the tree of its bark, it is felled by being cut through with a hatchet a little above the root. The bark is previously removed from this part, so that nothing may be lost; and as at the base of the tree the bark is thickest, and therefore most profitable, it is customary to remove the earth from around the trunk, so that the barking may be more complete. The tree seldom falls at once when cut through, for it is sustained either by climbing plants or by the adjacent trees. When at length the tree is down, and

COLLECTING CINCHONA BARK.

the useless branches have been cut off, the outer coat is removed by striking it with a mallet, and the inner bark so exposed is often further cleaned by a brush. The bark is then divided by regular incisions circumscribing the pieces which are to be removed, and these are separated from the trunk with a knife, the point of which is carried as closely as possible to the subjacent wood. The dimensions and regularity of the pieces necessarily depend more or less on the position in which the tree has fallen and other circumstances, but generally, for the convenience of transport, they are made from fifteen to eighteen inches long, and four or five inches wide. The bark is usually dried in the sun, and is in some cases submitted to pressure to induce it to retain its shape and prevent it from curling up into quills.

Quinine is prepared from cinchona on a large scale, the different barks yielding from three to ten per cent. It is met with in beautiful, silky, snow-white crystals, having a pure intensely bitter taste. It is but slightly soluble in water, but soon dissolves on the addition of a few drops of acid. It is the chief alkaloid or active principle contained in bark, the use of which it has to some extent superseded. The smallness of the dose required is a great advantage, a grain or a grain and a half being equal to a drachm of the bark.

When very large doses of bark or quinine are administered, a condition is induced which is known as "cinchonism" or "quinism." The symptoms to which collectively this term is applied are headache, noises in the ears, deafness, flashes of light before the eyes, confusion of sight, giddiness, and sometimes even slight delirium. Usually the headache is dull, heavy, and stupefying, but when a dose of twenty-five or thirty grains has been given, it is often agonising. Fortunately these symptoms are of short duration, and usually all pass off in a few hours. Some people are very susceptible to the action of quinine, and in them a comparatively small dose may produce the above symptoms. These unpleasant effects need not lead to the abandonment of the drug, a reduction in the quantity or in the frequency of administration being all that is requisite.

Bark has been long known to us as a most powerful and valuable tonic, and it may be administered with confidence in that large class of cases to which we apply the general term debility. It is useful when there is *want of tone*, as indicated by a general feeling of weakness, an incapacity for exertion, impaired appetite, and dyspeptic symptoms. In fact, when people are overworked, bothered, and feel regularly out of sorts, they cannot do better medicinally than take bark or quinine.

Then, again, bark is useful for people who have been pulled down by a long, painful illness, who have been knocked "clean off their legs" and "can't pick up again." It is often given as a preparation for, or after, surgical operations. It is common enough to hear medical men say, "We'll give you a little ammonia and bark, and that'll soon put you all right again," and nine times out of ten it proves successful. The ammonia and bark mixture (Pr. 13) is a powerful tonic, and may be employed with confidence.

It is not a very nice mixture, perhaps, to look at, but as it is intended to take, and not to be looked at, this is a matter of very little consequence. It may be objected even that it is not very nice to take, but even taste is quite a matter of opinion, and any man with the slightest imagination can persuade himself that it is very nice indeed, if he will only remember that it will do him good. It is not at all a bad plan to take it in half a glassful of port wine. It is often said that this is spoiling two good things, but you can but follow it by a dose of each separately if you do not like the combination. Do not imagine that any wine is good enough for medicine. You cannot make a greater mistake. Take the best bottle of wine in your cellar—do not hesitate, it will do you good.

The tonic quinine mixture (Pr. 9) is an excellent restorative. We call it the "tonic" quinine mixture, because, as we shall presently see, we use a stronger quinine mixture—not as a tonic, but in the treatment of certain diseases, such as blood poisoning. As we have already seen, quinine dissolves very slightly in water, and the acid is consequently added to make a clear solution. Would not the quinine do any good if taken in the insoluble form? Yes, it would answer just as well, for the gastric juice secreted by the stomach is, as you know, acid, and this would very soon dissolve up the quinine. Then, after all, there is not much good in the acid? Well, perhaps there is not; it is more a matter of convenience, and for the sake of appearance, than anything else.

Quinine is now extensively employed in the form of tabloids. They are made of the bisulphate of quinine, which has the advantage of being soluble in water. They are procurable in the following strengths: half a grain, one grain, two grains, three grains, and five grains. It is often a difficult matter to get good quinine abroad, and there is no more acceptable present to a resident in a tropical, and perhaps malarial climate, than a bottle of five hundred two-grain tabloids. They pack up in a very small space, and in many cases can be sent by post.

In ague quinine is a specific—a positive cure. The treatment of ague by quinine has already been fully discussed (*see* AGUE), with the best mode of administration, the time, and the dose in which it should be given, etc.

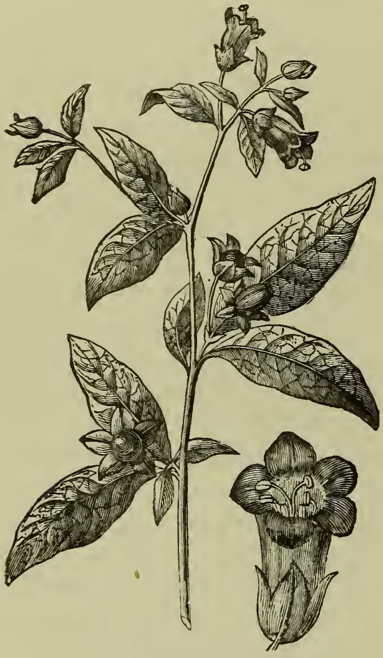
There is a very nasty form of neuralgia known as "brow ague." People who have had ague, perhaps years before, sometimes suffer from this when they get out of health. It is neuralgia of the brow, a pain just over the eyebrow, and sometimes it is periodic, that is, it always comes on just at the same time of the day. It is generally pretty punctual, and does not often forget its engagements. A watch is almost superfluous to people who suffer from this complaint. Fortunately it is nearly always cured by large doses of quinine, which should be given about half an hour before its expected visit. The five-grain quinine tabloids (T. 64), or the strong quinine mixture (Pr. 10) will have to be used for this purpose, as the dose in the tonic mixture is too small.

Sometimes in these cases of neuralgia the quinine taken "little and often" will do more good. Send for half a drachm of sulphate of quinine, and take as much as will adhere to the top of your finger every five or ten minutes. It is like drinking a glassful of wine a sip at a time—"sweet sorrow long drawn out." Blood poisoning, or, as it is technically called, pyæmia, is often treated by this quinine mixture given every four hours, and sometimes even much larger doses are given. The same method of treatment is often followed with advantage in other diseases attended with fever, such as inflammation of the lungs, typhoid fever, and typhus fever. The quinine reduces the temperature, or, in other words, brings down the fever and the preternatural heat of the body.

For noises in the head quinine may be given with advantage. Some people are perpetually troubled with a noise in their ears like the ringing of bells, or the rumbling of distant machinery. This condition is curable by the quinine mixture (Pr. 9), ten drops being taken every ten minutes for the first hour, and subsequently hourly. This mode of treatment nearly always proves successful. It would be impossible to enumerate all the uses of bark and quinine—their number is legion—but we have, we trust, said enough to indicate the class of case for which it should be used, and, in conclusion, we can only wish you every success.

BELLADONNA.—The atropa belladonna, dwale, or deadly nightshade, belongs to the natural order Solanaceæ, the family which yields us our potato. It grows in many parts of Britain on calcareous soil, but it is not by any means common. It is generally found in shady lanes and hedges in the neighbourhood of villages and ancient ruins. It is rarely met with in or near London, but it grows in abundance at Rochester, in Kent, in Windsor Park, and about Box Hill, in Surrey, and very luxuriantly amongst the ruins of Furness Abbey, in consequence of which the valley is called the Vale of Nightshade.

It is difficult to say why it is, but the belladonna is always associated with something romantic. Even in the name there seems to be a spice of romance. Atropa is derived from Atropos, the goddess whose duty it was to cut the thread of life without regard to sex, age, or quality, and it is supposed to be indicative of the inevitable fate of those who yield themselves to its influence. The Venetian ladies used water distilled from the plant as a cosmetic, from which circumstance it acquired its name, bella donna—beautiful woman.


BELLADONNA.

We must enter somewhat fully into the consideration of the botanical character of the plant, as it is often confounded, even by those who ought to know better, with the *solanum dulcamara*, or woody nightshade. The whole plant is of a lightish green colour, except the flowers, which are large and of a dingy brownish-purple, and the berries, which are of the rich deep black of black cherries. The root is thick, fleshy, and much branched; the stem grows about two feet high, and the leaves are oblong, tapering to each end. The flowers are bell-shaped, larger than those of the harebell, and placed singly in the bosom of the leaves. The border of the corolla is cut into five equal lobes, and there are five stamens and a tapering pistil with two cells. The odour of the whole plant is nauseous and oppressive, as if to give warning of its venomous nature.

Belladonna when taken in poisonous doses produces dryness of the mouth, thirst, and difficulty of swallowing; the face becomes flushed, the eyes bright, the pupils dilated, and the sight dim and hazy. Very frequently the whole body is covered with a bright red rash, resembling scarlet fever, and it is even sometimes followed by peeling of the skin.

The mind and senses become peculiarly affected, and a form of madness is produced. The ideas become incoherent and extravagant, and there is often decided delirium, with pleasing illusions. Sometimes the unfortunate patient is possessed with constant restlessness, keeps continually moving, and cannot be quieted. The delirium may be furious and dangerous, and occasionally under the influence of this drug people have become so unmanageable that they have had to be confined in a madhouse. It has been supposed that it is to the madness produced by belladonna that Banquo refers when he asks Macbeth—

> "Or have we eaten of the insane root
> That takes the reason prisoner?"

This may or may not be, but there is no doubt that the poisonous properties of the plant have been long known, for Buchanan, the Scottish historian, states that the Danes were treacherously defeated by the troops of Macbeath, who during a truce sent Sweno bread and a mixture of wine and ale containing poison, which from the description of the symptoms produced can have been none other than our belladonna.

During the Parthian war the troops of Mark Antony were greatly distressed for provisions, and belladonna is probably the plant referred to by Plutarch in the following passage:—

"Those who sought for herbs and pot-herbs obtained few that they had been accustomed to eat, and in tasting unknown herbs they found one which brought on madness and death. He that had eaten of it immediately lost all memory and knowledge; but at the same time would busy himself in turning and moving every stone he met with as if he was upon some very important pursuit. The camp was full of unhappy men bending to the ground; and thus digging up and removing stones till at last they were carried off by a bilious vomiting, when wine, the only remedy, was not to be found."

The preparations of belladonna are, for internal administration, an extract and a tincture; whilst for external application there are a plaster, a liniment, and an ointment.

The active principle of belladonna is an alkaloid known as atropine. It is a powerful poison, but given in small doses it is a most useful medicine, and is steadily replacing the crude drug from which it is obtained. It is best administered in the form of tabloids (T. 8), each of which contains one hundredth of a grain.

The best antidote in cases of poisoning by belladonna is pilocarpine, an alkaloid obtained from the South American plant known as Jaborandi.

The dose of pilocarpine is one-third of a grain, and it is administered in the form of tabloids.

For the relief of pain in the muscles and over-sensitiveness of the skin, few applications prove more efficacious than the belladonna liniment. It should be rubbed over the tender and painful spot several times during the course of the day. For pains in the side and lumbago, a large belladonna plaster may be used with benefit. It should be applied smoothly and carefully, and may be worn with advantage for several days, or even weeks.

Belladonna has the power of checking and ultimately arresting the secretion of milk, a property of which advantage may be taken by mothers who, having a good breast of milk, are yet from any cause unable to suckle the child. The breast in these cases often becomes greatly swollen and exquisitely painful, a condition which, if not relieved, may go on to the formation of milk abscesses. Belladonna speedily gives relief and obviates this danger. Either the liniment, extract, or ointment may be used, and should be well rubbed in several times a day, especially in the neighbourhood of the nipple. The earlier the application is made, the more speedy will be the relief obtained; but even should inflammation have set in, the continuous application of belladonna for twenty-four or forty-eight hours will, even under these adverse circumstances, usually arrest the formation of matter.

Not only has belladonna the power of arresting the flow of milk, but it also checks excessive sweating. The belladonna liniment used two or three times a day will completely check the perspiration of the head and face of young children, which is often so profuse as to soak their hair and the pillow upon which they have been sleeping. Many people are all their lives troubled with profuse sweating of the hands and feet, a complaint which may be gradually diminished, and sometimes completely arrested by rubbing in the belladonna liniment three or four times a day. Sometimes the perspiration secreted by the feet is not only in excess, but is also of an extremely offensive nature. An agreeably-smelling and extremely efficacious application may be obtained by requesting the chemist to use eau-de-Cologne instead of spirit in the preparation of the tincture of belladonna. It should be applied several times daily.

The internal administration of belladonna is often efficacious in arresting the night sweating which is so great a trouble to consumptive patients.

The atropine tabloids (T. 8) may be advantageously employed for this purpose. One should be given every night at bedtime for five or six nights, and then after an interval of a week the treatment may if necessary be resumed. The comfort experienced by the patient is often very great.

Belladonna administered internally is a very valuable remedy for sore throat, and in many cases will effect a positive cure. It is especially useful when there is much heat and pain on swallowing, with bright redness of the affected parts, flushed face and headache.

Belladonna is conveniently given in the form of the mixture (Pr. 39)—a tea-spoonful every quarter of an hour for the first hour, and subsequently hourly.

In the sore throat of scarlet fever this mixture will often prove of considerable value, mitigating the severity of this distressing symptom. It is often claimed for belladonna that it acts as a kind of charm against scarlatinal contagion, and prevents people from catching the fever. This is open to question, and such a statement must be received with a good deal of caution; but at the same time there can be no possible harm in taking the above mixture as directed when scarlatina is prevalent, or breaks out in a household.

The tincture of belladonna is often useful in certain forms of headache. The indications for its use are when the pain is situated over the brows and in the eyeballs, and when they seem to the sufferer as if they were too large for the head and would be forced out of the skull.

Belladonna often succeeds in allaying both the cough and oppressed breathing of asthma. It is essential for ensuring success to employ large doses. Fifteen drops of the tincture should be given every two or three hours, and if this produces no unpleasant symptoms, the quantity may even be increased. The same dose given to children every hour is one of the best remedies for whooping-cough. It must be remembered that children are not very susceptible to the action of this drug, and that they will take almost as large a dose as an adult.

The tincture of belladonna is both speedier and more certain in its action than any other remedy for that troublesome and distressing complaint of children, wetting the bed. From ten to twenty drops must be given three times a day in a little water. The treatment has often to be continued for a fortnight before it proves successful.

A celebrated French physician was very successful in the treatment of constipation and torpidity of the bowels by belladonna. He gave it in the form of pills, each containing 1½ grains of extract of belladonna, and the same quantity of the powdered belladonna leaf. One of these pills must be taken in the morning before breakfast, the dose being gradually increased to three or four pills if the desired effect is not previously obtained. As soon as the stools become regular, the belladonna must be discontinued and the organs allowed to act without assistance. It will be remembered that the anti-constipation tabloids (T. 3) contain belladonna.

BISMUTH.—There are two salts of the metal bismuth used in medicine—the subnitrate and carbonate. The former was long known under the title of "magistery of bismuth" or "pearl white," whilst the latter has been comparatively recently obtained. The term "white bismuth," which was formerly applied to the subnitrate, is no longer distinctive, as both salts are fine white powders insoluble in water. They are blackened by that gas of rotten-egg-like odour which we call sulphuretted hydrogen, a fact to be borne in mind by ladies who simultaneously use bismuth as a cosmetic, and indulge in the use of Harrogate waters. It would be unpleasant to suddenly turn black in the face whilst taking your afternoon tumbler at the springs.

Internally the bismuth preparations are used almost exclusively in diseases of the stomach and digestive apparatus. Bismuth is essentially a stomach medicine. Pain in the stomach, whether dependent on disease or merely arising from that somewhat irritable organ being a little "upset," is generally eased by a bismuth mixture (Pr. 18). The dose is two table-spoonfuls every four hours. The use of the tragacanth is to suspend the insoluble powders in the liquid and to prevent them from settling to the bottom. The mixture should be shaken before being used. In this, as in all other cases, the bismuth mixture is to be taken before meals. It will do no good if poured into the stomach already distended with food.

This mixture alleviates the pain arising from cancer, ulcer, and chronic inflammation of the stomach.

It proves beneficial in that form of irritable stomach which is so often a concomitant of habitual indulgence in ardent spirits. It subdues the pain, checks the vomiting, and enables the patient to take food. It need hardly be said that a more effectual remedy is afforded by the discontinuance of the habit on the existence of which these symptoms are dependent. It may also be given with advantage in cramp in the stomach.

That form of dyspepsia or indigestion which is accompanied by the return of a little fluid from the stomach into the mouth is often amenable to bismuth. Flatulence or wind in the stomach is often cured by the bismuth and charcoal powders (Pr. 75), one to be taken three times a day half an hour before meals.

Carbonate of bismuth is a very valuable remedy for some forms of chronic diarrhœa. It is especially useful in that intractable diarrhœa which so often proves fatal to patients in the last stage of consumption. It is absolutely necessary to use large doses. Half a drachm or a drachm of the subnitrate of bismuth must be given several times a day. It should be administered in a little milk, and when so taken, rarely upsets the stomach or causes any inconvenience. We have no hesitation in saying that bismuth, used in this manner, has prolonged the life of many a sufferer whose career the diarrhœa and consequent exhaustion would soon have brought to a close. In these cases bismuth is our sheet-anchor. Not only will it subdue the diarrhœa, but it sometimes effects so great an improvement in the general health, that those whose speedy death seemed inevitable rally, and ultimately return to the ordinary duties of life.

Obstinate diarrhœa occurring in children may be checked by bismuth. A grain of the subnitrate of bismuth may be given every hour, and its value is greatly enhanced by the addition to each dose of one-sixth of a grain of grey powder.

Bismuth is sometimes administered in the form of a colourless liquid known as citrate of bismuth and ammonium, the dose of which, given in water or some simple infusion, is from one to three teaspoonfuls.

BLACK DRAUGHT.—(*See* SENNA.)

BLISTERS.—(*See* CANTHARIDES.)

BORAX.—Borax is found native in Thibet and imported from India. It is a colourless, almost transparent salt, having a saltish taste. It dissolves readily in water, especially in hot water.

Sponging the head several times a day with a strong solution of borax in water is an excellent remedy for scurf or dandruff. It quickly loosens the scales and cleans the head. Glycerine of borax, made by dissolving an ounce of borax in four ounces of glycerine, is a still more effectual remedy. It should be applied at bed-time, and kept on all night. Borax ointment—one part of borax to eight of simple ointment

—is another good preparation. A liniment of equal parts of olive oil and lime often proves useful.

Borax is a very soothing application for all affections of the throat. Honey of borax is an excellent preparation, and is made by adding a drachm of powdered borax to an ounce of honey. An excellent gargle may be made by mixing one drachm of borax and two drachms of honey with four ounces of water.

Borax enters into the composition of many preparations for the teeth and gums. The following is an excellent mouth-wash:—Myrrh, one part; eau-de-Cologne, sixteen parts; borax, one part; water, three parts; and syrup, three parts.

BORACIC ACID, or BORIC ACID.—This is one of our most valuable remedies. It is made from borax by the action of sulphuric acid. It is composed of beautiful pearly scaly crystals which are soluble in water. It is used as an antiseptic dressing for wounds, and is also employed as a lotion and as an ointment. There is an ointment in the Pharmacopœia known as boracic acid ointment which is kept by chemists ready for use. It is largely used as an application for burns and various skin diseases, and also to allay itching. Boracic acid, if very finely powdered, makes a good dusting powder for children, and is far better than the common "violet powder" of the nursery.

Dissolved in glycerine it is a good application to the throat in diphtheria and croup, and is often employed to moisten the tongue and keep the mouth clean and the breath sweet in cases in which an antiseptic is required, as, for example, scarlet fever or typhoid fever.

A little boracic acid sprinkled in the socks will prevent any disagreeable odour from the feet in hot weather. It may in fact be used in almost every case in which an antiseptic is indicated. It is not poisonous, and a few grains added to a pint of milk will prevent it from turning sour even in the hottest weather.

There is a liquid preparation known as "Boro-Glycerine," which not only keeps milk, but also keeps fish and game and meat for an almost indefinite period.

BRIMSTONE.—(*See* SULPHUR.)

BROMIDE OF POTASSIUM — BROMIDE OF SODIUM — BROMIDE OF AMMONIUM.—These salts constitute the important therapeutical group of the bromides. They have all much the same action. Bromide of potassium has been longest known, and is probably the salt most extensively employed. Bromide of sodium is less depressing than bromide of potassium, whilst bromide of ammonium is intermediate in character.

Bromide of potassium is prepared from bromine, a dark red liquid of intensely disagreeable odour, obtained from sea-water and sea-plants. Bromide of potassium in appearance closely resembles iodide of potassium, although its curative powers are of a totally different order. A formula for a bromide of potassium mixture has already been given (Pr. 31).

People actively engaged during the day find it inconvenient to carry with them a bottle of medicine, and yet are unable to dispense with its assistance. The difficulty is easily overcome by purchasing the bromide in the form of tabloids, which are portable and convenient. Bromide of potassium is sold both in five and ten grain tabloids. Bromide of sodium tabloids are of the same strength, as are the tabloids of bromide of ammonium.

In the case of children it is often a great advantage to be able to give them medicine without their knowledge. With the bromide of sodium there is no difficulty, for it may be powdered and placed in the salt-cellar with an equal quantity of common salt, and taken at meals in the ordinary way. The little patient will regard the fact of his having a salt-cellar "all to himself" as a delicate mark of attention, and if generously disposed will probably offer to share it with the other members of the family.

Bromide of potassium, like the bromides of sodium and ammonium, is a nervine sedative, that is, it exerts a soothing or calming influence on the nervous system. These drugs have fluctuated from time to time in the estimation of medical men, but no doubt is now entertained as to their inestimable value in many diseases of a spasmodic character.

The bromides are undoubtedly the most valuable remedies we possess for epileptic fits or falling sickness. The tabloids, if taken three times a day, will sometimes completely cure this complaint, and even in cases in which the cure is not complete they prove extremely valuable in reducing the frequency and severity of the fits. By the use of these medicines the patient is enabled to ward off his attacks, so that instead of occurring several times a day he may be free from them for weeks or months, or even years. It must be remembered that epilepsy is often an old-standing complaint, and that such cases are not cured in a day. The disease has secured a firm hold upon the organism, and nothing but a prolonged course of treatment will serve to shake it off. The bromides must be persevered in week after week, and their use should never be rashly abandoned because their beneficial effects are not at once apparent. When the drug has to be continued for any length of time it is advisable to regularly suspend its use on one day in the week, or at longer intervals for several consecutive days, for if this precaution is neglected the system becomes accustomed to its use, and its influence over the disease is greatly impaired. When the fits occur only at night, two doses of the mixture may be taken together at bed-time, and none during the day.

In convulsions in children a tea-spoonful of the mixture may be given every four hours with advantage.

In whooping-cough tea-spoonful doses will often effect a cure, though this medicine usually proves of no avail when the child is at the same time cutting his teeth.

In somnambulism, night-screaming, and nightmare, this mixture usually proves beneficial when given at bed-time in doses of two table-spoonfuls for an adult, and two tea-spoonfuls for a child. Many people who have been over-worked or have over-taxed their brains, so that they cannot sleep at night from a feeling of worry and anxiety, obtain relief from the bromide of potassium mixture taken at bed-time. It calms the excitement, so that a refreshing night's rest is obtained, and strength recruited for meeting the troubles of the morrow.

Bromide of sodium is *the* remedy for spermatorrhœa. You can get half an ounce, put it in a pint bottle full of water, shake it for a few minutes; take three table-spoonfuls three times a day.

In delirium tremens, bromide of potassium, and the other bromides, are often given with marked benefit; they quickly remove the delusions, calm the delirium, and induce sleep. Three tabloids should be given every two hours until the desired effect is produced. The happiest results may be looked for when the case is taken early, particularly before the furious maniacal delirium has set in. The longer the use of the medicine is delayed, the less likely is it to prove of service.

The uninterrupted use of this medicine for long periods, as is sometimes necessitated in the case of sufferers from epilepsy, occasionally gives rise to a condition known as "bromism." Its occurrence is usually indicated by lowness of spirits, a feeling of depression, and disinclination for work, accompanied by an eruption of spots on the face and back. These symptoms quickly disappear on the suspension of the medicine for a few days.

BROMIDE OF STRONTIUM.—Bromide of strontium has to some extent replaced in medical practice the old bromide of potassium. It is a better salt and rarely produces those symptoms which constitute the condition known as bromism. For many years it was impossible to get bromide of strontium sufficiently pure for internal administration, but it is now sold for medicinal use free from barium or other poisonous ingredients.

The history of the discovery of the base strontium, and of the introduction of its salts into medicine, is interesting as an illustration of the indebtedness of medicine to commerce. From time immemorial there has been sold, under the name of "Rough on Rats," or some equally appropriate title, a preparation for the destruction of vermin, consisting of witherite or crude carbonate of barium. Many years ago there was discovered at Strontian, in Argyleshire, a deposit apparently consisting of this substance. It was purchased by the rat-destroying people, and was retailed in the usual way. Very soon, however, it became apparent that there was something wrong, for the proprietors were inundated by complaints from their customers that the rats, so far from being killed by the new stuff, seemed actually to thrive on it. The experts were set to work, but all they made out was that whilst the old witherite gave a green colour to the flame of the blow-pipe, the new substance turned it red. Subsequent investigation showed that hydrochloric acid exerted a somewhat different action on the two minerals, for the chloride of the new substance differed in many ways from the old and familiar chloride of barium. Sir Humphry Davy was induced to turn his attention to the subject, and at once pointed out that the substance obtained from the deposit at Strontian, although resembling witherite in physical properties, was quite a different body. He made an extensive investigation which ended in the isolation of a new base, to which he gave the name of "strontium," out of compliment to its birthplace. Thus, in the hands of a scientist a valuable discovery resulted from the investigation of the properties of a lowly rat-destroyer.

More recently the therapeutist has again been laid under obligation to the man of commerce, the French wine-growers having initiated and carried out an investigation which has placed us in possession of a new and powerful medicinal agent. It is well known that in many parts of France the ordinary red wine is "plastered," that is to say, sulphate of lime or plaster is added to the wine to improve its colour and assist in keeping it. As wine naturally contains tartrate of potash, a double decomposition takes place, tartrate of lime being precipitated and sulphate of potassium remaining in solution. If the sulphate of lime were added only in small quantities and with a light hand, no particular harm would be done, but as the vintner is guided not by chemical considerations but by purely empirical rules, and as lime, moreover, is cheap, he throws in his plaster in considerable quantities. The sulphate of potassium so formed not only acts as a purgative, but when the wine is drunk for any length of time exerts an unfavourable action on the kidneys. A paternal Government taking this into consideration, issued an edict that no wine offered for sale should contain more than half a drachm of sulphate of potash in the litre. The restriction was a serious one for the growers, for it is well known that the demand for Bordeaux wines is far in excess of the supply, and that it is eked out with wines from other districts. The true Bordeaux is not plastered, but the process of plastering is very generally resorted to by other growers. The obvious desideratum was to discover some chemical process by which the wines could be "unplastered," that is to say, deprived of a portion of their soluble sulphate by precipitation. There are practically only three insoluble sulphates — lead, barium and strontium—and even their insolubility is only comparative, for all three are more or less soluble in water. Lead was obviously out of the question from its well-known toxic and accumulative action. Barium was tried, but it was found that a trace of barium salt remained in solution or suspension, and exerted a distinctly injurious effect. Attention was then directed to strontium, and as this was known to be free from toxicity it was thought that the problem was solved. An unforeseen difficulty, however, presented itself, for it was found that the commercial salts of strontium were never free from barium, which was inadmissible.

Researches were then undertaken with the view of devising some means of separating the two bases. This was successfully accomplished, but it was not a practical process from the grower's point of view, the pure strontium salt being too costly to admit of its employment on a large scale and for cheap wines. The salt, however, was sufficiently inexpensive for use as a medicinal agent, and doctors were at once put in possession of a series of salts of strontium of absolute purity, and well adapted for medicinal use.

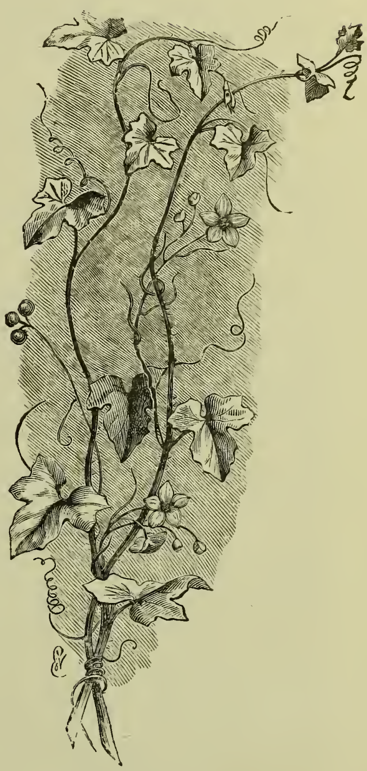
Bromide of strontium has been employed in a variety of affections, but its chief value is in epilepsy. From twenty to twenty-five grains in tabloids are given twice or three times a day with good results. The drug may have to be taken for a year or even longer without intermission. It is a good plan to omit or reduce the dose one day a week

—say on Sunday. When the fits occur at night it is a good plan to give one large dose at bed-time.

Bromide of strontium is useful in the treatment of the "heats and flushes" which are so often a source of discomfort to middle-aged women.

It is also useful in some forms of dyspepsia, especially when attended with acidity and flatulence.

BRYONIA.—The common or red-berried bryony (*Bryonia dioica*) is a native plant belonging to the cucumber family. It is found plentifully in Kent and many other counties in England, climbing by means of its tendrils over the hedges by the wayside. The leaves, which are borne on long footstalks, are large, hairy on both sides, and divided into five lobes. The flowers, though not by any means striking objects, are of a yellowish-white colour, and are elegantly streaked with green veins. The fruit is a small, round, red berry, about the size of a common pea. The root, which is the part used in medicine, is large and fleshy, and is often as thick as a man's thigh. It has an extremely disagreeable odour and a particularly nauseous taste, both of which, however, can be removed by frequent washing with cold water.



BRYONIA DIOICA.

There are many diseases in which the use of bryonia has been strongly recommended, and it exerts a marked influence over the serous membranes which line the large cavities of the body. Thus, it is especially extolled for its powers of absorbing the fluid from the chest in cases of pleurisy.

It is often used in a bad cold on the chest, the indications for its use being heat and soreness beneath the breast-bone, and an irritating, shaking cough attended with but little expectoration. In inflammation of the lungs considerable benefit has been experienced from its employment.

In some forms of headache it proves useful; for instance, in congestive headache, which is characterised by pain in the forehead, relieved by pressure, but much increased by stooping down. It also does good in headache confined to one side, and accompanied by retching and bilious vomiting.

Indigestion, particularly when indicated by weight at the pit of the stomach, eructations, and water-brash, may be relieved by this drug.

Bryonia is usually given in the form of a tincture, one part in ten, of which the dose is a drop every hour, or a smaller quantity more frequently repeated. A drop of the tincture is contained in each teaspoonful of the bryony mixture (Pr. 49).

CALABAR BEAN.—The Calabar bean (*Physostigma venenosum*), or Ordeal bean of Western Africa, belongs to the family of plants which yields us our ordinary domestic peas and beans. The portion used in medicine is the seed, which is of a brownish-red or pale chocolate colour, and closely resembles a large horse bean. It contains two white kernels, which are undistinguishable in taste from a haricot bean. Its use by the natives of Calabar as a judicial test has been already mentioned. The common belief is that if it is rejected by the accused he is innocent, but that if it is retained and proves fatal he is guilty, and that it served him right.

So strong is the popular belief in the test that a suspected person often voluntarily takes a dose with the view of establishing his innocence, probably under the impression that he will leave the court without a stain on his character, but finds only too late that he is the victim of misplaced confidence. Physostigma, when taken in poisonous doses, produces paralysis, chiefly by its action on the spinal marrow, death ultimately ensuing from deficient action of the muscles by which breathing is ordinarily performed.

A few years ago at Liverpool, from fifty to sixty children were accidentally poisoned by these beans. It was ascertained that the sweepings of a ship from the western coast of Africa had, with a carelessness which was almost criminal, been thrown on a heap of rubbish, where the children had found the beans and eaten them. Fortunately, death ensued in only one case.

Calabar bean is undoubtedly a valuable remedy for paralysis of the limbs, especially when the legs only are affected. In very old-standing cases, where the patient has been helpless for years, little or no benefit will in all probability be experienced, although if the disease is progressing, every hope may be entertained of arresting its course. In cases in which the disease is of recent origin the happiest results are often obtained by the use of this drug.

The preparation of Calabar bean used for medicinal purposes is an extract—the extract of physostigma. It should be made up into little pills, each containing $\frac{1}{60}$th of a grain, one of which should be taken every two hours. The following is the formula:—

Calabar Bean Pills.—Extract of physostigma, $\frac{1}{60}$th of a grain. To be made into a pill. One to be taken every four hours.

It must be remembered that a complaint of this nature is not readily cured, and that the use of the pills will have to be persevered in for weeks or even months before any decided improvement is noticeable. The patient must not despair because his progress towards recovery is very gradual.

In an allied complaint, known as locomotor ataxy, or stamping palsy, this method of treatment proves equally efficacious, the results being, in many cases, very striking, especially when the complaint is taken in an early stage.

In writers' cramp, the pills employed in the manner indicated will often effect a cure, even in cases apparently hopeless.

In the general paralysis of the insane, Calabar bean has proved markedly useful, not only arresting the progress of the disease, but also improving the mental and physical condition of the patient. Several cases of tetanus, or lock-jaw, have been cured by large doses of extract of physostigma, a quarter of a grain or more being given every hour. A drug which exerts a beneficial action on diseases of so serious a nature must be regarded as one of the most valuable in our armament.

CALOMEL.—(*See* MERCURY.)

CALUMBA.—Calumba is a good old-fashioned tonic, and one of our pleasantest and most agreeable bitters. It improves the appetite, assists digestion, and is often retained by the stomach when bark or quinine would be at once rejected.

It is the sliced root of a plant known botanically as the *Jateorriza Calumba.* Its history and native country were for many years involved in obscurity, although it was supposed that its name was derived from

Colombo, the principal town in the island of Ceylon. It is now ascertained that our supply is obtained entirely from the dense forests of Mozambique, on the east coast of Africa. It is not cultivated, as the spontaneous produce is sufficient to meet the demand. The offsets of the root of the "kalumb," as it is called by the natives, are dug up in the hot season, cut transversely in slices, and then carefully dried.

We usually receive it in circular or oval pieces about the size of half a crown, but somewhat thicker. It is a light yellow colour towards the centre, but is surrounded externally by a darker part, having a brown wrinkled appearance. A good specimen should be solid and heavy, and not spongy or worm-eaten. The odour is faint, and somewhat aromatic, whilst the taste is very bitter. Two preparations of calumba are in common use, a tincture and an infusion. The infusion is made by macerating, for half an hour in a covered vessel, half an ounce of calumba root, cut small, with half a pint of cold water, and then straining. Unfortunately this infusion will not keep, and in a day or two becomes mouldy. The dose of the tincture is from a half to a tea-spoonful in water, and of the infusion two table-spoonfuls.

The infusion may be given with advantage in cases of general debility, loss of appetite, and indigestion. Like all medicines intended to improve the appetite, it must be given shortly before meals. It is of all bitters the least likely to disagree with the stomach, and during convalescence after a serious illness it is an excellent preparative for a more powerful tonic, such as bark. Calumba may be conveniently given in conjunction with acids or alkalies. It has a great advantage over most other tonics, as it does not form a black unsightly mixture when administered with iron.

From a closely allied species, *Cocculus indicus*, berries are obtained which are largely used for two illegal purposes—firstly, to intoxicate fish, so that they may be readily captured, and secondly, to adulterate beer. They are said to be very extensively employed by the brewers in the manufacture of porter, giving it an inebriating quality which passes for strength. It is a powerful poison, and its effects on the system are most injurious.

CAMPHOR.—Camphor is obtained from a large forest tree with evergreen shining leaves, which grows wild in Japan. The drug is diffused throughout all parts of the plant, and is procured from the wood, root, and branches, which are first cut into chips, and then distilled. The crude camphor so obtained is separated from its impurities by being mixed with lime and sublimed into thin glass vessels, which, on being broken, yield us the pure substance in the bell-shaped masses in which we usually see it in the chemist's window. It is white, translucent, tough, and crystalline, and has a powerful penetrating odour, and a pungent, bitter taste. It floats readily on water, and, when lighted, burns with a clear brilliant flame. It is poison to fleas, bugs, and other insects, a property by no means to be despised. The Chinese use the fragrant white wood of the camphor tree in making trunks and cabinets for protecting articles of clothing from the ravages of moths.

CAMPHOR PLANT.

The preparation of camphor most commonly used is the spirits of camphor, made by dissolving one ounce of camphor in nine fluid ounces of rectified spirit. Sometimes it is advisable to use the stronger "essence of camphor." It is a saturated solution of camphor in spirit, and is made by dissolving an ounce of camphor in an ounce and a quarter of rectified spirit. Rubini's preparation contains about a grain in a drop. Camphor is not usually regarded as a very active poison, but the strong preparations must be used with a certain amount of caution.

We now proceed to speak of the cases in which its use is indicated.

Camphor, when employed at the very commencement of the attack, exerts a decidedly beneficial influence on that annoying complaint, "a cold in the head." Even when it fails to effect a cure it diminishes the pain over the forehead, and restrains the sneezing and running at the nose. There are people who are subject to periodical fits of incessant sneezing, accompanied by a profuse watery discharge from the eyes and nose. For either of these complaints the patient should take from four to six drops of spirits of camphor (the weaker of the two preparations we have mentioned), in a little water, every fifteen minutes for the first hour, and subsequently hourly. In addition, he should snuff some powdered camphor up the nostrils, or inhale some spirits of camphor from a pocket-handkerchief.

Camphor is *par excellence* the remedy for choleraic and summer diarrhœa. Four or five drops of essence of camphor (the strong preparation) should be given in a tea-spoonful of brandy every ten minutes, until the urgent symptoms are relieved, and should then be continued hourly. It usually at once checks the diarrhœa, prevents cramps, and restores warmth to the extremities. It is very desirable that it should be given at the very commencement of the attack, every hour lost being of importance.

There are many forms of diarrhœa not allied to cholera, which are, nevertheless, readily controlled by camphor. Thus, it usually restrains the diarrhœa excited by the effluvia from bad drains, and the diarrhœa from which many women suffer whenever they happen to catch cold. The weaker preparation (spirits of camphor), administered in the doses we have indicated, answers admirably for these cases.

CANTHARIDES, or SPANISH FLY.—There is no doubt that the Greeks used some insect for the purposes of blistering, but whether it was our Spanish fly is a point on which there is some difference of opinion. Some authorities have shown that it was the identical animal, whilst others have proved with equal clearness that it was a different kind of beetle altogether. It is really a matter of very little importance, for we know that cantharides is a powerful medicinal agent.

The scientific name of the Spanish fly is *Cantharis vesicatorum*—rather a big name for so small a creature. They are procured in Russia and Siberia, but chiefly in Hungary. They seldom visit this country, except as an article of commerce, but some forty years ago they are said to have been for a time quite common in Essex and Suffolk. Their life is a short one—for it is stated that they live only eight or ten days. They swarm upon the trees about May or June, especially on the ash, lilac, and privet. They exhale a strong fœtid and penetrating odour, by which their presence is at once detected, and which is so offensive that the public walks are usually deserted until they have disappeared. They are readily caught, either early in the morning or in the evening, when they are not very active. Large cloths are spread under the trees, which are then shaken by men armed with long poles. The beaters usually cover their faces, and protect their hands with thick gloves. Various methods have been recommended for killing the beetles when caught, but the plan usually adopted is to plunge the cloths containing them into hot vinegar and water. They are then placed on hurdles covered with paper, and dried in the sun, or in a warm room.

They are from half an inch to an inch long, the wing-sheaths are of a beautiful green colour, and encase two thin brownish membranous wings. They should be preserved, if possible, in tightly stoppered bottles, but they are subjected to the ravages of no less than four different kinds of insects, by which they are rapidly destroyed, unless a little acetic acid, or camphor, or some similar substance, be added to keep away these unwelcome visitors. Spanish fly is not infrequently adulterated—sometimes pieces of glass of the shape and colour of the beetle have been added to increase the weight, and sometimes the active principles have been extracted with ether, and the worthless residue sold as genuine.

Spanish flies produce a well marked effect when used either externally or internally. When applied to the skin they cause at first a sensation of heat, accompanied by pain, redness, and slight swelling, and this soon goes on to the formation of a blister.

Cantharides is not often administered with the view of committing murder or suicide, but several cases of accidental poisoning have occurred. On one occasion a man took a tea-spoonful of the powder flies by mistake for jalap. The case is also recorded of a coachman who poisoned a whole family by mixing tincture of cantharides with their beer, the only explanation he was able to afford being that he thought it would be a "lark." He was acquitted on the ground that he had no malicious intention. The law was shortly afterwards amended, and people are no longer permitted to play "larks" of that nature with impunity.

The symptoms produced by a poisonous dose of cantharides are usually very severe. At first there is a burning sensation in the throat, with great difficulty of swallowing, violent pain in the abdomen, with nausea and vomiting of fluid streaked with blood. Then there is great thirst and dryness of the throat; and after a time a heavy dull pain is experienced in the loins. There is an incessant desire to pass water, but only a little blood, or blood mixed with urine, is voided at each effort. Purging sometimes supervenes, being accompanied with griping and straining, the evacuations being mixed with blood. When the drug has been administered in the form of powder, little shining particles can be detected in the vomited matter, and this usually leads to the discovery of the nature of the case. The treatment too frequently proves of no avail. When vomiting exists it should be promoted by warm demulcent drinks, such as thick linseed tea or strong gum and water, but if absent emetics and castor oil should be given—the object being, of course, to get rid of the poison. Olive oil was formerly regarded as an antidote, but it is now known that this is a ready solvent of the active principle of the poison, and that its use is injurious.

There are several preparations of cantharides, the majority, however, being solely for external application. Of these the blistering paper and blistering fluid are the most useful. When a speedy action is required the fluid must be used, and if applied freely it will usually produce a well-marked blister in from twenty minutes to half an hour. The paper is a much milder preparation, and may usually be applied for an hour without causing much more than redness and irritation of the skin, a result which in many cases proves as effectual as the blistering produced by the more energetic preparation.

Irritation of the skin, or counter-irritation as it is usually termed, is an extremely valuable mode of treatment in many diseases. It is employed in various morbid conditions of the deep-seated organs. Thus, in inflammation of the lungs the solution of cantharides lightly painted over the back will frequently lessen the pain and improve the condition of the patient, by subduing the accompanying restlessness. In pleurisy a blister applied to the chest often promotes the absorption of the fluid. Sometimes it serves to cut short an attack of asthma, and will relieve the shortness of breath accompanying chronic bronchitis. The blistering should never be severe, though it may with advantage be frequently repeated. The blisters, as soon as they form, should be covered with a layer of cotton wool. It is never necessary or advisable to open them, and should they burst they should be carefully protected, and on no account should any irritant be applied, with the view of keeping up the discharge. All the good they accomplish is done by irritating the skin, the subsequent draining of the fluid serving only to weaken the patient. In neuralgia of the face, or tic, as it is usually called, relief is speedily obtained by the application of a piece of blistering-paper, about the size of half-a-crown, behind each ear or to the temples. In neuralgia of the side left after shingles, a complaint not uncommon in elderly people, a blister often does good. Blisters are of the greatest service in sciatica. They should be applied every second or third day over the seat of the pain, and should reach down to the knee. In this complaint free blistering often succeeds when no benefit has been obtained from slight counter-irritation. The limb after the application should be swathed in a large sheet of cotton wool.

Blistering paper applied behind the ear often does good in inflammation of the eye. A similar mode of treatment is useful in earache.

Cantharides is the active ingredient in nearly all the preparations so extensively lauded for promoting the growth of the hair. It may be taken for granted that an application which is warranted to produce a heavy crop of whiskers on the smoothest face in the short space of six weeks contains cantharides. This drug, by acting as an irritant, induces a determination of blood to the part, and in this manner may aid the development of the hair. Of course such a preparation should be used with caution. One might apply it to only one side of the face at a time, the other being used as a standard of comparison.

Administered internally, cantharides exerts a specific action on the urinary organs. It is a valuable remedy for inability to retain the water. This complaint is most frequently met with in young people. There are many women, however, especially middle-aged women, who suffer from a frequent desire to pass water. There may be nothing wrong with the urine itself, and the act of micturition may be unattended with straining or other trouble, there is simply an inability to retain the water for the proper length of time. Some people cannot help passing a little urine on the slightest exertion, even on sneezing or coughing, or laughing. These complaints are very distressing, particularly as from a feeling of delicacy they are too frequently not brought under the notice of the medical attendant. They are usually readily cured by cantharides, taken as indicated in Pr. 47.

CARBONATE OF AMMONIUM.—(*See* SAL VOLATILE.)

CARBONATE OF MAGNESIUM.—(*See* MAGNESIUM.)

CASCARA SAGRADA.—The cascara sagrada, or sacred bark, is allied in action to the old-fashioned buckthorn, which from time immemorial has been administered to dogs as a purgative.

It has acquired a wide reputation as a laxative, and is largely employed for this purpose both in Europe and in America. It has obtained official recognition and is now a pharmacopœial preparation. Many spurious imitations are sold, and in order to obtain satisfactory results it is necessary to secure a carefully collected and matured bark.

The dose of the valoid of cascara sagrada is from ten drops to half a tea-spoonful in water, and this may be taken either at bed-time or the first thing in the morning.

It is more conveniently administered in the form of the tabloids, each of which contains two grains of the extract.

A very good combination is one grain of the solid extract of cascara, half a grain of euonymin, one sixteenth of a grain of extract of nux vomica, and one third of a grain of extract of hyoscyamus. This formula is put up in tabloids, which are known as Compound Cascara Sagrada Tabloids. For an adult one or two tabloids may be taken at bed-time.

For children the extract of cascara sagrada may be mixed with an equal quantity of glycerine. It rarely produces griping, but evacuates the contents of the stomach and intestines without straining or subsequent depression.

Cascara sagrada has had a long run of popularity, and seems destined to obtain a permanent place in our list of therapeutic agents as a mild laxative.

CASCARILLA.—(*See* QUASSIA.)

CASTOR OIL—CROTON OIL.—Castor oil is expressed from the seeds of the castor-oil plant, which is found native in almost all parts of the East and West Indies. In our gardens it never attains any great size, but in warmer climates the "palma christi," as it is sometimes called, is a large well-formed tree. The croton oil seeds must have been known from the most ancient times, for they have been found preserved with mummies at least 4,000 years old.

The oil is usually obtained by crushing the seeds, which are about the size of small beans, blunt at the extremities, of a light ash colour, and marked all over with dark spots and lines. The characters of this oil are well known; it is viscid, colourless, of a pale straw-yellow, and, if not rancid, has a flavour which is not very unpleasant. It does not solidify, even at the freezing point of water, but when exposed to the air slowly dries up into a kind of varnish.

CASTOR OIL PLANT AND SEEDS.

It is a mild, speedy, and certain purgative, producing two or three motions with little straining or griping. It does not derange the digestive functions as stronger aperients do, and hence it is admirably suited for children, and people who object to have their digestive apparatus unnecessarily disturbed. Curiously enough, there are many people who imagine that unless a purgative gripes them it can by no possibility do them any good.

Castor oil is not a good purgative for habitual constipation, for it increases the torpidity of the bowels. In irritable diarrhœa, from the presence of indigestible matter, it forms an appropriate remedy. The dose for infants is a small tea-spoonful, for young children from one to two fluid drachms, and for adults from one to three table-spoonfuls. It may be taken floating on milk, or orange wine, or in beef-tea highly peppered and well salted, or it may be beaten up with an equal quantity of the froth of porter, and tossed off before the constituents have separated.

Croton oil is a very much more powerful and energetic drug than castor oil, and must be used with considerable caution. Dangerous symptoms have, in children, been produced by a single drop taken internally. We refer to it chiefly because it is occasionally mixed in small quantities with castor oil, and sold, usually in capsules, as "concentrated castor oil." The seeds from which it is obtained are not unlike those of the castor oil plant, but are smaller and duller in colour. They are so powerful that even the dust arising from them in emptying the packages has produced copious purging. A year or two ago a number of these seeds were washed ashore near Waterford from a vessel which had foundered at sea, and were picked up and eaten by the country people, twenty-four of whom shortly afterwards suffered from symptoms of poisoning. When a person is insensible, in a fit, for example, and cannot swallow bulky purgatives, a single drop of croton oil placed on the tongue will serve to relieve the bowels. It must be washed down with a little castor oil, milk, or some other liquid.

CATECHU—KINO—RHATANY ROOT.—These substances are all three astringents, and their properties depend mainly on the tannic acid they contain.

Catechu is obtained chiefly from a climbing shrub, known as the "Gambier Shrub," a native of the East Indian Archipelago and Ceylon. The leaves are boiled in water until their astringency is all extracted, and the decoction is then thickened and cut into pieces to dry. It is usually obtained in tubes about an inch in diameter, which are porous, externally of a reddish-brown colour, and internally of an ochre-yellow or pale brick-red. There are, however, other varieties of catechu which do not present these characters. Thus, the black or acacia catechu is met with in brownish, irregular masses, often weighing many pounds. This variety is a great favourite in India, where it is known as "cutch," or "kut;" and formerly the term "Terra Japonica" was applied to it, on the supposition that it was an earth obtained from Japan. All kinds of catechu agree in one character, for they have all an extremely bitter, disagreeable, astringent taste.

Kino is the dried juice obtained from a lofty tree known as the "kino tree," growing in Ceylon and the adjacent parts of India. It is obtained from making incisions into the trunk of the tree, which is replete with a red watery juice which, as it exudes, has the appearance of red currant jelly, but after a few hours' exposure to the sun dries into a brittle solid. It has no odour, but the taste is very astringent, and when chewed it tinges the saliva blood-red.

Rhatany root, or kramaria, as it is sometimes called, is the root-stock of a tree or large shrub which grows spontaneously in Peru. It is largely employed by the Spanish and Portuguese for improving the colour, astringency, and richness of red wines. A saturated infusion of the root in brandy is known as "wine colouring," and is said to be greatly valued for the deep, rich colour it imparts to port wine. The root has no odour, but the powder has a sweetish, astringent taste. Rhatany lozenges (Pr. 111) are useful in relaxed sore throat.

These three drugs are frequently employed for obstinate diarrhœa. The dose of the officinal tincture is in each case from half a tea-spoonful to a tea-spoonful in water. Half a tea-spoonful of tincture of catechu added to two table-spoonfuls of chalk mixture forms an efficacious, though extremely disagreeable, diarrhœa medicine.

CHALK.—(*See* LIME WATER AND CHALK.)

CHAMOMILE.—The chamomile (*Anthemis nobilis*) is too well-known to call for any detailed description. It grows wild in many parts of England, and it is a common object in almost every cottage garden.

It is a useful remedy in many complaints of women and children. It appears to exert a special influence over the disorders which attend the process of teething, and when administered to children does much to mitigate the fretfulness and peevishness from which they so frequently suffer at that important period of their existence. In the diarrhœa which often accompanies teething, and is usually characterised by green, slimy stools, chamomile proves useful, especially when given at the commencement of the attack. It is, of course, a perfectly harmless remedy, and is not to be placed in the same category as the so-called "teething powders." Chamomile effectually relieves the cramps and pains in the legs from which women frequently suffer during the last months of pregnancy. It frequently acts as a sedative to people who have been "upset," and made ill by worry and vexation.

CHARCOAL.—Carbon, or charcoal, can be made either from wood or from the bones of animals.

When made from wood it is known as wood or vegetable charcoal, whilst that procured from bones is called animal charcoal or bone black.

Wood charcoal is readily made by setting fire to a pile of wood, and then covering it with turf and ashes, so that from want of air it smoulders away instead of bursting into flame. The woods most usually preferred for this purpose are oak, beech, hazel, and willow. The wood charcoal thus prepared may retain the shape of the piece of wood from which it was formed, or it may be reduced to powder.

Animal charcoal, or bone-black, is extensively prepared for the use of sugar refiners, and is made by heating bones to a red heat without access of air.

Either form may be used medicinally. Carbon is quite insoluble in water, and fortunately belongs to that class of medicines which are destitute of smell or taste.

Carbon is usually taken with advantage in diseases and disorders of the stomach. It will often relieve the pain arising from ulcer of the stomach, although it cannot be supposed that it has the power of curing that complaint. People who suffer from flatulence, or wind, often derive very considerable benefit from its use. Carbon proves especially beneficial in cases in which after meals the "wind" is formed and discharged in very large quantities. It will often succeed in arresting this disagreeable condition, after almost every other remedy has been tried in vain. Either form of charcoal may be used, in doses of from half a tea-spoonful to a table-spoonful. It is often sold in the form of charcoal biscuits, of which two or three may be taken as a dose, and is sometimes made into lozenges. For the relief of flatulence it may be used with the greatest advantage at those times when the formation of wind is most troublesome. It is often given in combination with bismuth (Pr. 75).

Its power of absorbing deleterious gases into its pores has received other applications. It is often made into a poultice with bread and linseed-meal, and used as a dressing for foul-smelling ulcers and sores. Small flat muslin bags filled with charcoal and placed in contact with disagreeably-smelling surfaces often make the confinement of the sick chamber less unpleasant both to the patient and to those who undertake the duties of nursing.

The disinfectant properties of charcoal have also been turned to account in the manufacture of respirators, which it was at one time hoped would serve to destroy the organic matters which propagate disease, and prevent their entrance into the system. Charcoal is frequently used as a tooth powder, the areca-nut charcoal being most esteemed for this purpose, on account of the hardness of its particles.

CHEKEN.—Cheken, or chekan, or chequen—for it is known by all three names—is an evergreen shrub closely resembling our common myrtle. It grows abundantly in the central provinces of Chili. It is usually said to belong to the genus eugenia, but some botanists refer it to the closely allied genus myrtus.

The leaves are the parts used in medicine, and these are made into a fluid extract, each part of which corresponds to one part of the drug, so that it is what is called a one in one preparation.

It is used largely in the treatment of chronic bronchitis, winter cough, and allied complaints. In Valparaiso it is highly esteemed as a remedy for phthisis and all forms of consumption, and it is an established fact that it allays chronic cough and checks bleeding from the lungs.

The dose of the fluid extract is a tea-spoonful in a wine-glass of water three times a day.

Cheken has not as yet received official sanction, but it is frequently prescribed, and most chemists keep the fluid extract in stock.

CHLORAL.—Chloral is a drug which, during the last few years, has obtained a great reputation for the treatment of all diseases in which pain or sleeplessness is a prominent symptom. It is a useful drug, although it must be admitted that it has not maintained its early reputation.

It is prepared by the action of chlorine gas on alcohol. It is generally met with in small colourless crystals, having a pungent and rather bitter taste, and an odour which has been compared to that of pears. It is soluble in water, and is often sold in solution.

The sleep produced by a moderate dose of chloral, say from ten to fifteen grains, is usually calm, refreshing, and dreamless. It is not profound, and the patient, when roused, will often take a hearty meal, then lie down again and at once resume his nap. It comes on sometimes in a few minutes, but more frequently in about half an hour after taking the dose. It should be given at bed-time, and the patient should remain quiet and avoid excitement, for otherwise it may produce restlessness instead of sleep.

The after-effects of chloral are usually slight; sometimes it produces on the following morning a good deal of heaviness and sleepiness, and occasionally frightful dreams, excitement, intoxication, and delirium. As a general rule, however, it causes no giddiness, headache, nervous depression, constipation, sickness, or loss of appetite.

It is to be feared that the practice of taking chloral for every little ache and pain is greatly on the increase. Many ladies never think of travelling without it, and carry it in their dressing cases with as much carelessness as if it were so much eau-de-Cologne. Perhaps the greatest objection to its constant use is that it is apt to cause sudden death. Some two or three years ago an inquest was held on the body of a confirmed chloral eater, who was found in such a position as to show that he must have died whilst in the very act of stepping into bed. About the same time a gentleman in Canada was charged with the murder of his wife. He had been in the habit of taking chloral, in large doses, for some weeks. This was withdrawn suddenly. He then became irritable and unnaturally violent, and in a fit of passion, for some trivial cause, threw a petroleum lamp at his wife. Her dress caught fire, and she was burnt to death before his eyes. He had previously always been a most affectionate husband, and at the time of the commission of the act was, apparently, hardly conscious of what he was doing. The medical men consulted in the case stated that the long-continued use of chloral might produce a diseased condition of the brain, which, on the sudden withdrawal of the narcotic, might render a person temporarily irresponsible for his acts. People who, without medical sanction, habitually use chloral, should at once rid themselves of a dangerous and pernicious habit.

Chloral is usually administered in the form of a syrup. Syrup of chloral is made by dissolving eighty grains of chloral in half an ounce of water, and then adding simple syrup to make it up to an ounce. Each drachm contains ten grains, and the usual dose of the syrup is from half a drachm to two drachms. The tabloids of chloral contain five grains in each.

As we have already said, chloral is used to produce sleep, and for the alleviation of pain. Thus it subdues the sleeplessness of old people and the wakefulness induced by excessive mental exertion. The sedative draught (Pr. 37) may be employed. In delirium tremens, chloral not only removes the most prominent symptoms, but if given at the very commencement of an attack, often averts a serious illness. In this disease from twenty to thirty-grain doses may be given every four hours, and should the patient make any objection to taking his medicine, it may be administered in a glass of stout without fear of detection.

Chloral is now often used to cause sleep in labours, having for this purpose to some extent superseded chloroform. A drachm and a half of the syrup is given when the pains become very urgent, and the dose is repeated if necessary in twenty minutes. The patient becomes drowsy, and passes through her troubles almost without her knowledge.

CHLORATE OF POTASSIUM.—(*See* NITRE AND CHLORATE OF POTASSIUM.)

CHLORIDE OF AMMONIUM.—(*See* SAL AMMONIAC.)

CHLORODYNE.—(*See* OPIUM.)

COCA and COCAINE.—By coca we mean the dried leaves of the erythroxylon coca, a shrub growing wild in many parts of South America, but extensively cultivated for medicinal purposes.

The leaves, when matured, are carefully picked by hand so as to avoid breaking them, and they are then dried in the sun. The industry must be a very large one if reliance can be placed on the statement that two million pounds' worth are produced every year.

Coca leaves were used by the aborigines long before their conquest by the Spaniards. They regarded them as a Divine gift, and spoke of them as "that heavenly plant which satisfies the hungry, strengthens the weak, and makes men forget their misfortunes." At first the leaves were reserved for religious rites and the use of the sovereign, and to this day they are regarded with superstitious dread by the Indians, who put them in the mouths of their dead to secure them a favourable reception in the next world. They were employed by the Peruvians as a medium of exchange, and on the introduction of a gold and silver coinage, became the chief article of commerce. The Spaniards were at first opposed to their introduction and the priests promulgated edicts against them, denouncing them as "Elusio del demonio." The prohibition was removed when it was found that they were a source of revenue, and the mine owners recognised their value in sustaining and increasing the productive power of their employés. The earliest account of coca was given by Dr. Monardes, of Seville, in 1569, and an English translation of his paper was published in London in 1596.

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The dried leaves are chewed by the natives of South America to sustain strength and appease hunger in the absence of food. The rural postman, before starting on his long journeys, provides himself with a little bag of the leaves and some finely-powdered lime. When he wishes for a chew he forms a roll of leaves in his mouth with his tongue, moistens a slip of wood, dips it in the lime or in ashes, and smears it over the roll of leaves. This brings out the flavour and excites the flow of saliva. It is said that these post-runners carry letters more than a hundred leagues without partaking of food of any kind. Native travellers apparently derive such sustenance from chewing the leaves, that they frequently take no food for four or five days, although travelling on foot during the whole time. They say that when provided with a good supply of leaves they feel neither hunger nor thirst, and can without inconvenience remain eight or ten days without sleep. Miners chewing the leaves every three hours and taking no food but an occasional handful of rice or maize are enabled to work for twelve hours at a stretch without inconvenience.

It is stated that coca does not destroy the appetite, the proof being that when the work is over they not only enjoy a good meal, but often eat ravenously. It is possible that many of these statements are incorrectly reported and are exaggerated.

It is generally admitted that the excessive use of coca is injurious, and that the confirmed "coquero," or chewer, becomes after a time listless, haggard and gloomy, and that he is not altogether a lively companion.

There is only one official preparation of coca, the liquid extract the dose of which is from half a tea-spoonful to a tea-spoonful.

In addition to the official preparation there are various unofficial coca wines, the best being that known as Mariani's, which is an excellent tonic and restorative.

A good coca wine may be made by macerating dried coca leaves for six days in port wine—the proportions being six parts of the leaves to one hundred parts of the wine. Good leaves cost only about a shilling a pound, but there is a considerable loss on making the wine on a small scale, so that it is really just as cheap to buy it ready made.

From coca is derived the alkaloid cocaine, the most powerful local anæsthetic with which we are acquainted. When a drop or two of a four per cent. solution is placed in the eye it dilates the pupil and at once allays all pain and irritation. A somewhat stronger solution applied to the mucous membrane of the mouth or to the teeth, or any other part from which it can be absorbed, produces similar anæsthetic effects.

It is not readily absorbed by the unbroken skin, and is of comparatively little use in the treatment of neuralgia. It is sometimes injected under the skin so as to produce a little circle of tissue free from pain.

It can be employed for operations on the mucous membranes, but for large operations such as amputations, it is practically useless.

It has been employed with success in the treatment of sea-sickness.

Some people are very susceptible to the action of cocaine, the smallest dose producing giddiness and fainting.

It is an admissible remedy in the hands of a medical man, but by the general public should be employed with caution.

It can be obtained in tabloids containing one-tenth, a sixth, a quarter, and half a grain in each.

CIMICIFUGA.—This plant is the *Actæa racemosa,* or black snake root. It is an American importation, and grows abundantly in the open woods and on the hill-sides throughout the United States, from Canada to Florida. It is a herb from three to five feet high, bearing whitish flowers, and closely resembling in its main features our baneberry. It is also known as *Cimicifuga racemosa.*

The root is the only part used medicinally, and of this a tincture is prepared of the strength of four ounces to a pint of rectified spirit. The dose is five drops given every hour.

Actæa exerts its influence chiefly on the womb, and can be relied on for relief of symptoms depending on a disordered condition of that organ. It has the power of restoring the periods when they have been suddenly checked by cold, shock, or mental emotion, and it will also remove the pain in the head, back, and limbs which often accompanies this condition. It may be taken with advantage when the periods are attended with pain and general disturbance of the system. It will relieve the pain under the left breast which is as constant an indication of some disturbance of the womb as is the pain in the shoulder that the liver is out of order. It is also serviceable in that distressing headache from which many women suffer at each period, and particularly at the change of life. When the headache is also accompanied by severe aching pains in the eyeballs it is more especially indicated.

Many people are martyrs to the following complaint: The joints, which may be enlarged or not, are stiff and are racked with pain, which flits about from limb to limb in a manner which is infinitely more distressing than if it were to confine its attention wholly to one spot. It is aggravated by cold or wet, and is usually worse at night, so that the rest is much broken. In these cases the tincture of actæa racemosa should be tried, and its use is especially indicated when the sufferer is a female, and the symptoms can be traced to some previous derangement of the womb, as the sudden stoppage of the periods, a miscarriage, a painful or difficult labour, or the change of life.

Again, in cases of this description actæa is signally useful: The patient is first troubled with rheumatic pains in the joints, unattended with swelling; after a short interval the disease settles in one part, such as the wrist, or hand, the tissues become thickened, and the bones enlarged, till finally all movement is lost, and the member becomes useless. Warmth usually allays the pain, which is almost always easier at night. Instant relief is in these cases given by the drug now under consideration, even when everything else has been tried in vain.

CINCHONA.—(*See* BARK AND QUININE, p. 10.)

CODEINE.—Codeine is an alkaloid obtained from opium, but is much less poisonous.

It is frequently employed for the relief of cough, especially the cough of consumption. A popular form of administration is the codeine jelly, a tea-spoonful of which is taken three or four times a day.

Codeine is frequently prescribed in cases of diabetes, the patient being appropriately dieted.

The best salt of codeine is the phosphate which may be obtained in tabloids each containing one-eighth of a grain. They may be used to allay pain or to check troublesome coughs.

COD-LIVER OIL.—Cod-liver oil has long been used as a popular remedy in Sweden and other parts of Northern Europe. Nearly a century ago it was introduced into this country as a remedy for chronic rheumatism, but it is only during the last twenty-five years that it has been so extensively employed, and has obtained such a wonderful reputation, in the treatment of consumption and other wasting diseases.

Cod-liver oil is, or should be, the oil extracted from the fresh liver of the common cod, a fish which abounds on the coast of England, France, Iceland, and Norway, but especially off Newfoundland; other species of oil-yielding fish, such as the dorse, the ling, and the whiting, are, however, sometimes employed. The best English cod-liver oil is prepared as follows:—

The livers are collected daily, so that decomposition may not have ensued, and after careful examination to remove all traces of blood and impurity, they are sliced and exposed to a moderate temperature till all the oil has drained away from them. This is filtered and exposed to a lower temperature to congeal much of the solid fat, which is then removed by filtration, the oil being put into bottles well secured from the action of the air.

Other and rougher methods are sometimes adopted, by which inferior kinds of oil are obtained. Thus, on the coast of Newfoundland it is customary to use a number of tubs bored with holes at the bottom. The livers are piled upon a layer of fir twigs, and allowed to remain exposed to the sun and air until they undergo decomposition. The oil runs out through the holes in the bottom of the tubs into vessels placed beneath to receive it. Cod-liver oil obtained in this way is often brown, rancid, and nauseous.

There are three different varieties of cod-liver oil, the pale, the light brown, and the dark brown. The pale is the officinal form, and is undoubtedly infinitely superior to either of the others. The difference in colour in the oils depends upon the circumstances attending the preparation, more particularly on the amount of heat employed, the state of freshness or putridity of the livers, and the length of exposure to the atmosphere. The dark brown oil is more impure than the other forms, and has a taste and odour which to most people are peculiarly disagreeable and offensive. Respecting the relative value of the different forms of oil in the treatment of disease, it may be stated that the evidence is entirely in favour of the pale variety.

The beneficial effects produced in different diseases by the administration of cod-liver oil have been ascribed to the minute quantities of iodine and phosphorus it contains. This is clearly a mistake, for equally good effects are not obtained from the use of these substances alone.

Cod-liver oil when first taken often excites nausea, vomiting, and disagreeable eructations, and occasionally the difficulty in overcoming the distaste for the medicine is almost insuperable. On the other hand, many people soon learn to like the oil, and look forward to medicine time with the utmost eagerness. Many an old consumptive will toss off his allowance of oil with as much gusto as other people exhibit after taking a glass of some rare old vintage.

There are several ways in which cod-liver oil may be given, for instance, floating on orange or ginger wine, or on a little weak brandy and water. A most excellent plan is to take it with the gentian and soda mixture (Pr. 14). The oil should be poured out on the surface of the medicine, so as not to touch the sides of the glass, and when taken in this manner it is almost destitute of taste.

The following are also convenient vehicles for the administration of the oil:—

1. Dilute phosphoric acid, half an ounce; tincture of cascarilla, one and a half ounces; syrup of ginger, one ounce; compound infusion of orange-peel, to eight ounces. A table-spoonful with each dose of the oil.

2. Dilute phosphoric acid, half an ounce; solution of strychnia, one drachm; tincture of orange-peel, one ounce; syrup of ginger, one ounce; compound infusion of orange-peel, to eight ounces. A table-spoonful with each dose of the oil.

A very good plan is to take the oil in stout. A glass of stout is poured several times from tumbler to tumbler till it is in a good froth. The oil is then carefully dropped on to the surface of the stout, where it will remain completely hidden by the froth. The stout can now be drunk at a draught without any indication of the presence of the oil.

Many people who cannot take cod-liver oil in any other way assimilate it readily in the form of the Kepler Solution of Malt and Cod-liver Oil. This preparation contains fifty per cent. of the oil which is practically tasteless. There is no doubt about its activity, and consumptive patients and people suffering from debility thrive on it. It is a great favourite with children of all ages.

It is a mistake to give large doses of cod-liver oil, for it is not absorbed, and passes off by the bowels unaltered. To commence with, a dose of a tea-spoonful even for an adult is quite sufficient, and it is very rarely necessary to take more than a table-spoonful at a time. Many people seem to think they cannot have too much of a good thing, and take the oil in absurdly large quantities. We knew a labouring man who for many months spent nearly half his wages in the purchase of cod-liver oil, without deriving the slightest benefit from his extravagance. The oil should be taken soon after meals.

Cod-liver oil is employed in the treatment of a vast number of diseases. It is of special service in scrofula, removing the various manifestations of the disease, such as discharge from the ears and nose, inflammation of the eyes, strumous abscesses, etc. In the treatment of consumption and other wasting diseases it is pre-eminently useful. Some of the happiest and most striking cases of arrested consumption are due to the judicious administration of this oil. It is also useful in other diseases of the lungs, such as chronic bronchitis, and asthma. Many obstinate skin diseases, dependent on a consumptive or scrofulous taint, get well under the use of cod-liver oil. In rickets, and other diseases of children, it is given with advantage. Many sufferers from chronic gout or rheumatism are benefited by the same treatment.

The Kepler Malt and Oil is the best preparation, and may be used with confidence in the treatment of consumption, scrofula, rickets, and other diseases. It may be obtained from any chemist.

COFFEE and CAFFEINE.—The coffee tree is generally regarded as a native of Arabia, but by some it is said to derive its name from Caffee, a province in Narea in Africa, where it grows in great abundance. It usually attains a height of from fifteen to twenty feet, and is covered with a dark green shining foliage. The trunk is erect, but seldom exceeds two or three inches in diameter. The flowers are white in colour, and diffuse a most delicious, harmless fragrance, in the midst of which the natives fix their habitations. The fruit, which contains the seeds, is something like a cherry, and is at first red, though it subsequently becomes purple. The coffee tree is frequently cultivated in this country, in hot-houses, as an ornamental evergreen, and, under favourable circumstances, will both blossom and mature its fruit.

It is evident that we are indebted to the Arabians for the use of this pleasant beverage, for the first rite of Eastern hospitality is the presentation of a bowl of coffee. A curious story is told of its introduction to notice. It is said that in ancient times a poor dervish, who lived in a valley in Arabia, observed a strange hilarity in his goats on their return home every evening. To find out the cause of this he watched them during the day, and observed that they eagerly devoured the blossoms and fruit of a tree, which hitherto he had disregarded. He tried the effects of this food upon himself, and was thrown into such a state of exhilaration that the neighbours thought that the old gentleman had been making too free with the brandy-bottle. He revealed to them his discovery, and they agreed that Allah had sent the coffee plant to the faithful as a substitute for the forbidden wine. In Europe coffee is said to have been first used in Italy, and it appears to have been introduced into this country about the middle of the seventeenth century. Ordinary coffee is usually mixed with chicory, the roasted root of the wild endive. At first this substance was used only as an adulteration by fraudulent

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dealers, but the process gradually extended itself so widely, that the admixture has been legalised.

In many exhausting diseases "nutritious coffee" proves of value as a stimulant and article of diet. It is prepared as follows:—"Dissolve a little isinglass in water, then put half an ounce of freshly-ground coffee into a saucepan, with one pint of new milk, which should be nearly boiling before the coffee is added, boil both together for three minutes; clear it by pouring some of it into a cup, and dashing it back again, add the isinglass, and leave it to settle on the hob for a few minutes. Beat up an egg in a breakfast cup and pour the coffee upon it; if preferred, drink it without the egg."

Coffee is not only a valuable article of diet, but it is a therapeutical agent of no mean power. When coffee is used as a medicine it should be made very strong and taken in small quantities. It is frequently administered in cases of opium poisoning, with a view of warding off sleep. In spasmodic asthma it is an old-standing remedy. In many cases *café noir* proves extremely beneficial. It should be taken very hot and strong, and on an empty stomach. Asthmatics who derive benefit from it should not use it as a daily beverage, but reserve it for the time of an attack. In nervous headaches not dependent on a disordered stomach coffee is a valuable remedy. It nearly always effects a cure or affords palliation. In many forms of neuralgia it proves useful.

From coffee berries, and also from other sources, we obtain a valuable alkaloid known as caffeine, which can be combined with citric acid to form citrate of caffeine. The citrate is a powerful diuretic and is frequently prescribed for its action on the kidneys. In the form of Bishop's Granular Effervescent Citrate of Caffeine it is largely employed for the relief of headache. The dose of citrate of caffeine is from one to three grains, and it can be obtained in tabloids containing a grain in each. The effervescing preparation contains a grain in the drachm, and the dose is one tea-spoonful in water. Some people are peculiarly susceptible to the action of caffeine, and are kept awake by it just as they are by a cup of black coffee taken at bed-time. Caffeine is contained not only in coffee but in tea, guarana, and the kola nut.

COLCHICUM.—Meadow saffron (*Colchicum autumnale*) is a native plant, growing abundantly in many of our moist, rich meadows. The leaves appear early in the spring, and the flowers late in the autumn, from which latter circumstance it has been called the harbinger of winter. Our supply is derived chiefly from Gloucestershire, but Hampshire and Oxfordshire not infrequently furnish a fair quantity. In Scotland it is not by any means common. The flowers are of a pale purple or lilac colour, and so closely resemble those of the autumn crocus that an inexperienced observer might readily mistake the one for the other. The crocus, however, has only three stamens and one style, whilst the colchicum has six stamens and three styles. In many parts of the country the flowers are known as "naked ladies." The parts used for medicinal purposes are the seed and the bulb, or root, as it is commonly called. The seeds, which should be collected when fully ripe, are about the size of black mustard seeds, odourless, and have a bitter taste. The bulb is as large as a chestnut, and of a somewhat similar shape. It is readily distinguished from the crocus and the bulbs of most other plants which resemble it by being solid and not composed of separate layers or shells like an onion. It should be collected in July. The preparation most commonly used for internal administration is the wine, which is made as follows:—"Macerate four ounces of colchicum corm, sliced, dried, and bruised, in a pint of sherry for seven days, with occasional agitation, press, and strain through calico, and then add sufficient sherry to make it up to a pint. This is by far the best preparation to keep for ordinary use. The dose is thirty drops three times a day, in a little water."

MEADOW SAFFRON.

Colchicum is undoubtedly the most valuable remedy we possess for the treatment of gout. It is often stated that colchicum exerts its peculiarly beneficial effect on gout simply by purging the patient. This is not the case, for colchicum will often effect a cure when administered in doses far too small to have any purgative action; and, on the other hand, other purgatives may be given till the patient is well-nigh exhausted without his experiencing the slightest benefit. There are two ways in which colchicum wine may be given for gout—either frequently in moderate doses, say, ten drops three times a day, or in one large single dose of half a tea-spoonful. The large dose usually cures more quickly than the small, and when the patient is suffering much pain, and is extremely anxious to get rid of his enemy, it is better to employ this method. When, on the other hand, the patient has only "a little touch" of the gout, he can afford to use the smaller doses, and effect a more leisurely cure. The larger dose of colchicum soon excites a feeling of warmth at the stomach, with a glow and outbreak of perspiration all over the body. The effect of this large dose is generally very rapid, for it will often remove the severest pain of gout in one or two hours, and very soon after the heat and swelling subside. It must be remembered, however, that colchicum is merely a palliative—that it eases the sufferer's pain for the time, but that it has no power to effect a permanent cure or to ward off future attacks. It may be given with bicarbonate of soda (Pr. 33).

Not only in gout itself does colchicum afford relief, but its administration proves beneficial in almost all complaints from which gouty people suffer. Thus, if a gouty person is suffering from a bad cold, or from asthma, or from indigestion, or even from a skin disease, he will probably obtain more speedy relief from colchicum than from any other drug.

Colchicum less frequently effects a cure in rheumatism than in gout, though there are many pains in the limbs and joints, not gouty in origin, which are benefited by the drug. Five-drop doses of colchicum wine will not infrequently cure that obstinate complaint called crick in the neck.

In using colchicum, the requisite number of drops of colchicum wine should be dropped into a glass, and taken with about two table-spoonfuls of water.

Colchicum in large doses is distinctly poisonous, and must be employed with caution. Death has occurred from the injudicious use ot "gout pills" containing extract of colchicum.

COLOCYNTH.—Colocynth is the fruit of the "Bitter Apple," a plant belonging to the family which yields us the melon, gourd, and cucumber. It grows abundantly in India and on the shores of the Mediterranean. It is about the size of an orange, though somewhat lighter in colour, and is covered with a hard, thick rind. It is usually peeled before being sent to England, so that we receive only the white, spongy portion, which forms the pulp or pith. This is frequently used as a show specimen in chemists' windows, being met with in white balls, which are tough, but at the same time light and porous. The smaller variety of the fruit is considered the best, and is usually imported with the seeds removed.

Colocynth is a powerful purgative, producing copious watery evacuations. It is seldom given alone, from its tendency to cause griping, but is used to increase the action of other and milder purgatives. It usually operates mildly, certainly, and effectually. The "compound colocynth pill" is a favourite aperient, and may be given with safety in all forms of obstinate constipation.

Powdered bitter apple is a popular remedy for the destruction of moth. It is efficacious, but the powder if inhaled is highly irritating, and in susceptible subjects has been known to induce an attack of asthma.

CREAM OF TARTAR.—(*See* EPSOM SALTS, p. 61.)

CREASOTE.—(*See* TAR AND CREASOTE.)

CROTON OIL.—(*See* CASTOR OIL AND CROTON OIL, p. 40.)

CUBEBS.—This is the dried unripe fruit of the cubeb pepper. It is an excellent expectorant, and is used largely in cases of chronic bronchitis, asthma, and winter cough. A good plan is to make a cup of linseed tea, add a tea-spoonful of tincture of cubebs, and flavour with a slice of lemon. This should be sipped slowly in the morning after breakfast, the dose if necessary being repeated before retiring to rest. Another good plan is to grind some cubebs in a coffee mill, and after carefully drying it roll it up into cigarettes. They burn readily, and can be smoked without difficulty. The smoke tastes hot, but can be taken well down into the chest without fear. In America, where all catarrhal diseases are common, the custom of smoking cubeb cigarettes is prevalent.

DAMIANA.—Damiana is the name given to the leaves of various species of Turnera. It is said to have been used by the North American Indians as an aphrodisiac. It is probably the basis of many of the nostrums so constantly advertised as remedies for sexual debility and impotence. It is probably that it is a nervine tonic of some value. It is best taken in the form of the Valoid Fluid Extract, the dose of which is a tea-spoonful three times a day. It would be better to avoid the quack preparations, the composition of which is rarely given.

DERMATOL.—Dermatol is chemically a basic gallate of bismuth. It is a fine saffron-yellow powder destitute of odour. It is antispetic, and has been largely employed in Germany in the after-treatment of surgical operations. Its great use, however, is as a "dusting powder" for infants. The dermatol dusting powder is a most useful application for blisters, excoriations, abrasions, cuts, bruises, and burns. It is largely employed in the nursery, and is far preferable to the old-fashioned "violet powder."

DIGITALIS.—This, our common "foxglove," is not only one of the most beautiful and conspicuous of our indigenous plants, but also one of the most valuable articles of the materia medica. It is so well known that it would be superfluous to enter into any detailed description of its characters. It grows wild in almost every county in England, Norfolk and Suffolk being the most conspicuous exceptions.

It would seem probable that both the Latin and English names bear reference to the shape of the flowers, although it is supposed by some that foxglove is a corruption of "foxes' glew" or "foxes' music," in allusion to an Anglo-Saxon musical instrument consisting of bells arranged on an arched support. All parts of the plant have at different times been used in medicine, but the leaves only are now officinal. As doubts have been expressed as to the activity of the cultivated varieties, it is advisable to use the wild plant if it can be as readily obtained. The roots collected in the autumn or winter of their first year are possessed of active properties, as are also the seeds. The leaves should be gathered when the plant is in its greatest perfection—that is, just before or during the period of flowering, and those are to be preferred which are full-grown and fresh. They may be placed in baskets and dried in the sun, or gradually before the fire. They should be preserved in well-stoppered bottles covered externally with black paper, and kept in a dark cupboard. As they in time degenerate and lose their active properties, the supply should be renewed annually.

The preparations of the digitalis used in medicine are the tincture and infusion. The infusion is made by steeping thirty grains of dried foxglove leaves in half a pint of boiling water for an hour, and then straining. Digitalis is a powerful drug, and it is not by any means a matter of indifference of what strength the infusion is made. A young man recently nearly lost his life from the careless preparation and use of this drug. He filled a quart pitcher with the leaves of the foxglove, and poured over them as much water as the jug would hold. At bed-time he took a tea-cupful of this strong infusion, and on the following morning a similar dose of the then still stronger infusion. He soon felt dizzy and heavy, began to stagger, then became unconscious, and had to be conveyed home. He vomited almost continuously, the vomited matter being of a grass-green colour, and on recovering consciousness he complained of excruciating pains in the bowels. His pulse was low—so low indeed that it was feared that every moment would be his last. Fortunately, however, he rallied, and under appropriate medical treatment was gradually, though very slowly, restored to health.

DIGITALIS.

For medicinal purposes the fresh and well-made infusion should be used in preference to the tincture. In all treatment the object should be to obtain the greatest possible effect by the use of the smallest possible dose of medicine. This is especially the case with a drug like digitalis, which may have to be administered for considerable periods of time, so that there might be a danger of its gradually accumulating in the system and producing untoward results. It should be especially noted that whilst the dose of most infusions is from one to two fluid ounces, that is, from two to four table-spoonfuls, the dose of infusion of digitalis is only from two to four drachms. And it should be remembered, too, that whilst a drachm is nominally equal to a tea-spoonful, most of our modern tea-spoons hold much more than a drachm, and not uncommonly more than two drachms. Digitalis is so powerful a remedy that the greatest care must be employed in its use. It is advisable in most cases in which the use of the foxglove is indicated to begin with half tea-spoonful doses of the infusion three or four times a day, and to increase the quantity gradually only when the drug appears to be losing its influence.

Digitalis is especially a heart remedy—a remedy that stands us in good service in cases of need. Sufferers from giddiness, tendency to fainting, breathlessness on exertion, and palpitation of the heart, will do well to take the infusion of foxglove in the cautious manner we have indicated, but only under medical advice. When this condition is also attended with anæmia (paleness, or poorness of the blood) the digitalis may be advantageous, combined with an iron mixture. In Pr. 8 we have the formula for such a combination.

Digitalis is one of our best remedies for dropsy, whether dependent on Bright's disease or on some affection of the heart. It greatly increases the flow of urine, and in this manner drains off the fluid from the limbs. Half tea-spoonful doses of the freshly prepared infusion will usually be found efficacious. It is not desirable to continue the medicine after the swelling has subsided.

Digitalis is a useful remedy for spermatorrhœa, although in the majority of cases bromide of potassium, as already recommended, is to be preferred. The infusion of digitalis may be taken in doses of twenty drops three times a day for a week. Strict attention must be paid to the general health.

The foxglove is useful in headache when confined to the forehead, and of a heavy throbbing character.

DIURETIN.—Diuretin is closely allied in chemical action to caffein, but apparently exerts a much more powerful action on the kidneys. It is used with advantage in Bright's disease and many other affections attended with dropsy. In nervous susceptible people it exerts an exciting action, especially when they complain of restlessness and inability to sleep. It can be obtained in five-grain tabloids, one of which dissolved in hot water should be given three or four times a day.

DOVER'S POWDER.—(*See* OPIUM.)

EASTON'S SYRUP.—(*See* IRON.)

EPSOM SALTS, AND OTHER SALINE PURGATIVES.—From the mildness and safety of its operation, its ready solubility in water, and its cheapness, sulphate of magnesia, or Epsom salts, was for many years the most commonly employed purgative, both by the public and their doctors, although its popularity is now apparently somewhat on the wane. Its most familiar name is derived from its original discovery in 1675 in a spring at Epsom. Epsom has lost much of its original reputation as a watering-place, although a good many people still make a pilgrimage in that direction about the last week in May.

Sulphate of magnesium is now usually procured from dolomite or magnesia limestone, which is used for building purposes, and occurs in different counties in England in quantities sufficient to purge the whole human race for centuries to come. The characters of Epsom salts are known to most of us. It occurs in minute colourless transparent crystals, having a nauseous bitter taste. Some people have really a liking for Epsom salts, and will take it in any form, even spread on bread and butter.

As a mild and efficacious purgative it is useful in all cases in which something stronger than a mere laxative is required. It should be taken fasting, preferably before breakfast, and largely diluted with water. The ordinary dose is from a quarter of an ounce to an ounce, but some people have apparently an unlimited capacity for Epsom salts, and can take it *ad libitum.*

The white mixture (Pr. 25) contains both Epsom salts and carbonate of magnesia.

Sulphate of magnesium enters largely into the composition of many of our popular purgative waters, more especially the Pullna and Friedrichshall.

A salt which in its purgative properties closely resembles Epsom salts is sulphate of soda, or Glauber's salts. Large quantities of it are formed as a residue in the manufacture of hydrochloric acid (spirit of salt) from common salt. It is an essential constituent of the Cheltenham and Leamington waters, and is also found in Carlsbad salts. The dose is from a quarter of an ounce to an ounce, but it is not very often used, as its taste is even more nauseous than that of Epsom salts.

Acid tartrate of potassium, or cream of tartar, is another member of this group. In the fermentation of wine a crystalline crust is deposited on the sides and bottom of the casks, and is known as "argol," or, according to its colour, as red or white "tartar." It is dissolved in water, and during the ensuing process of evaporation the purest crystals are skimmed off the top, forming "cream of tartar," the substance now under consideration. Its dose as a laxative is from four to six drachms, but it is usually administered in combination with other drugs—for example, in the form of compound jalap powder, or as confection of sulphur.

Prepared from cream of tartar is tartarated soda, or "Rochelle salt," so called from having been discovered by an apothecary of that city. It is a mild aperient, and often acts as a good supplement to stronger purgatives. It enters into the composition of the Rochelle draught (Pr. 26), and the ever-popular Seidlitz powder, which contains in the blue paper carbonate of soda 40 grains, and Rochelle salt 120 grains; and in the white paper, tartaric acid 37 grains.

ERGOT.—Ergot is a diseased condition of the seed or grain of the rye and some other plants, caused probably by the presence of a fungus. When the rye undergoes this change it is known as "spurred rye." It is seldom that the whole of the ear of the rye is affected, usually a few only of the grains suffering. The ergotised grains retain very much the shape of the ordinary undamaged grains, except that they are a little curved, and often cracked. They are of a deep purple or brown colour, and are covered more or less by a bloom. They are readily broken across, and the interior will be found to be whitish, or of a pink colour. The odour in each individual grain is hardly detectable, but in considerable quantities it is distinct and somewhat disagreeable.

There are two preparations of ergot in ordinary use for medicinal purposes, the liquid extract and the infusion. The former is a very efficient and reliable preparation, but in many cases of labour, where it is important to obtain the full action of the drug, it is better to use the freshly-prepared infusion. This is made as follows:—A drachm of the powdered ergot is thrown into a tea-cupful of boiling water, and allowed to stand on the hob for five minutes, with occasional stirring. It may be sweetened to taste, and should be taken in two doses, half at a time, the grounds and all being swallowed. It is very important that the drug should be fresh, and it should always be kept in a tightly-stoppered bottle. Many medical men, who are liable at any moment to be called away to attend a case of midwifery, find it advantageous to carry the powdered ergot wrapped in leaden paper in their pocket-book or instrument-case.

Ergot exerts its influence chiefly on the womb, and care must be taken not to administer it to pregnant women, for fear of producing a miscarriage. In cases of labour the delivery of the child is often facilitated by the administration of ergot, but caution is requisite in its employment, and it should be given only under the superintendence of a medical man. In first labours and cross births its administration is inadmissible, and in the latter case its injudicious use may prove speedily fatal to both mother and child. In flooding it is of inestimable value, and by its timely use many lives have been saved, when recovery appeared almost hopeless. It is best to give a half teaspoonful dose of the liquid extract of ergot at once, and not to lose time in making an infusion.

EUCALYPTUS.

EUCALYPTUS.—The dried leaves of the eucalyptus globulus, or blue gum-tree of Australia, are well known to possess medicinal properties of the highest order. They contain an oil which is a powerful antiseptic, and exerts a remarkable ozonising influence on the air with which it is brought in contact. As an antiseptic and germicide it possesses three times the strength of carbolic acid in preventing the development of bacteria, and is much less poisonous. Used as an antiseptic it is of the greatest value in all surgical operations. As an inhalation it may be employed with confidence in all naso-pharyngeal affections, and in chronic bronchitis, and winter cough. Many physicians prescribe it largely in cases of consumption. Three drops of eucalyptia on a piece of bread or sugar may be given in flatulence or dyspepsia.

A few years ago during the prevalence of the influenza epidemic there was a great demand for eucalyptus oil, as a means of warding off the disease, but it must be confessed that the evidence as to its efficacy in this particular direction was very slight. It is probable that attention to general hygienic conditions was a much more powerful factor in warding off the disease.

EUONYMIN.—Euonymin is a dry extract obtained from the euonymus atropurpureus or wahoo, a native of the United States. It is not a purgative but exerts a remarkable and characteristic action on the liver. It is especially useful in cases of torpidity of the liver, and biliousness. It is best administered in the form of two grain pills taken at bed-time. The bile is poured out into the intestine, and if a dose of Franz Josef water is taken the first thing in the morning the accumulated bile is carried off, and a decidedly beneficial action is experienced.

EXTRACT OF MALT.—The Kepler Extract of Malt has long enjoyed a high reputation in Germany, Switzerland, and America, and is now largely employed in this country.

The malt is not fermented, so that it contains no alcohol, and is free from intoxicating properties. One of its chief constituents is malt sugar, a most valuable aid to digestion. It improves the powers of assimilation, and in consumption, bronchitis, scrofula, rickets, and many of the wasting diseases of children, it proves highly beneficial, an improvement being quickly noticed. It has a sweet, agreeable taste, and is taken without difficulty. The best way is to begin with a tea-spoonful twice a day with meals, but the dose will be speedily increased to a table-spoonful or more. It may be taken alone from the spoon or mixed with a little milk or milk and soda-water. The "Solution of Malt and Cod-liver Oil" is also a good preparation.

A list of preparations of extract of malt has already been given (Vol. I., p. 15).

EXALGIN.—Exalgin has recently come very prominently into notice as a remedy for facial neuralgia. There can be no doubt as to its power of allaying pain. Its administration is not attended with any disagreeable after-consequences. It is best administered in the form of two grain tabloids. The dose depends very much on the severity of the pain, but as a rule two two grain tabloids three times a day give speedy relief. It is a comparatively new remedy. but its beneficial effects are certainly remarkable.

FERN ROOT SANTONINE—POMEGRANATE—SPIRITS OF TURPENTINE. —These substances are used in medicine chiefly for the destruction and expulsion of the different kinds of worms which infest the human body.

The male shield-fern (*Aspidium felix mas*) is one of the commonest of our British ferns. It is found in woods and shady situations, and on moist banks in many parts of the country. The root should be collected in July, August, or September, and after the removal of the black portions, fibres, and scales, it should be dried and powdered, and then preserved in stoppered bottles. It is made into a liquid extract with ether, and in this form is administered for the expulsion of the tape-worm.

Santonica belongs to the same genus of plants as the wormwood or absinth. It is obtained chiefly from the Levant, the unexpanded flowers being imported in large quantities. These flowers in general appearance closely resemble seeds, and have a strong odour and a bitter camphoraceous taste. They yield a white crystalline principle, known as santonin, in which form the medicine is usually given. Patients who have been taking it for any length of time often see everything tinged yellow or green. It proves very efficacious in the treatment of thread-worms, but is inoperative in expelling the tape-worm.

Santonin may be conveniently mixed with sugar, so as to form a powder, as in Pr. 79. One of these is the dose for a child of from two to ten years of age; for an adult two should be given. It may be necessary to repeat the dose on two or three consecutive days. Sometimes it is advantageous to give the santonin dissolved in a tea-spoonful of castor oil instead of in powder. It is occasionally made into lozenges, or into little cakes resembling ginger-bread, the more readily to impose on the infant mind. One of these powders, or even a half or a quarter of a powder, given at bed-time often proves successful in arresting the tendency exhibited by many children to wet the bed. This method of treatment may succeed even when others have been tried in vain.

The pomegranate (*Punica granatum*) is a native of the south of Europe, of Arabia, Persia, and Japan. It was well known to both the Greeks and the Romans, and is frequently mentioned in the Bible. It is largely grown in India and Ceylon, chiefly for the sake of its fruit. It frequently attains a height of from eighteen to twenty feet, and bears large flowers of a beautiful rich scarlet colour. It blossoms luxuriantly, even in this country, but here the fruit is seldom obtained in perfection. In its native countries the fruit is as large as an orange, and the juicy rose-coloured pulp which it contains proves very grateful to patients suffering from the distressing thirst of fever. The flowers and the rind of the fruit were employed by the ancients for their astringent properties, and are still used in India in the treatment of diarrhœa and dysentery. The Chinese, Hindoos, Greeks, and Romans have from time immemorial regarded the bark of the root as a specific for tape-worm. They direct the maceration of two ounces of the bruised bark of the fresh root for twenty-four hours in two pints of water, which is then boiled down to one-half, strained, and divided into three doses, which are to be taken at half-hour intervals. Vomiting often ensues, but this should not prevent the administration of the whole quantity. The treatment should be repeated daily for four or five days. In this country we usually obtain the dried root imported from the south of Europe, and it must be admitted that it not infrequently fails.

Oil of turpentine, or spirits of turpentine, is a clear colourless fluid obtained by distillation from the crude turpentine which exudes from the trunks of different species of pine.

It is efficacious in the treatment of the tape-worm, nearly always killing the animal before expelling it. When used for this purpose it should be administered in one dose of two or three tea-spoonfuls, which may be given in milk. It usually acts as a purgative, but as it is in this respect somewhat uncertain, it is better to combine it with a little castor oil. A full dose of turpentine, if not quickly expelled from the system by purging, is apt to produce excitement, giddiness, and confusion of sight—in fact, a condition closely allied to intoxication.

Turpentine has, however, other uses irrespective of its power of destroying worms. It is a valuable remedy for bleeding of all kinds, whether it be from the stomach, bowels, lungs, nose, womb, kidneys, or bladder. It is very conveniently given in five-drop doses, frequently repeated, but when the symptoms are very urgent it is better to administer it in one large dose of half a tea-spoonful or even more. It probably exerts some special influence over the kidneys, for the urine of patients taking this remedy acquires an odour which is compared by some to that of violets, and by others to mignonette. Large doses often cause the urine to become bloody, but this soon disappears on discontinuing the use of the drug.

FRIAR'S BALSAM—BALSAM OF PERU—BALSAM OF TOLU.— There are several substances used in medicine known as balsams. Thus we have the balsam of Peru and the balsam of tolu, both having similar properties.

TOLU.

The balsam of Peru is obtained from a lofty tree growing in Central America. In the first place, the bark is bruised by striking it with the back of an axe, so as to promote its separation. In a few days it is charred by placing a lighted torch in contact with it, with the view of increasing the flow of the balsam. In a week or ten days the bark drops off, or is, at all events, so loose that it can be readily detached. Rags are inserted in apertures and crevices in the tree, and soon become saturated with balsam. They are then removed and boiled, the balsam being skimmed off the surface of the water. Thus obtained, it forms a thick, viscid, almost opaque substance, somewhat resembling treacle.

Balsam of tolu is procured by making incisions in a lofty evergreen tree, a native of New Granada. It is a soft tenacious solid, having a fragrant balsamic odour, and somewhat resembling in appearance the balsam of Peru.

Both these substances were at one time extensively employed as application to ulcers, cuts, wounds, and abrasions. It was argued that, as they promoted the union of external surfaces, they might be used with advantage for many diseases of the internal organs. The argument may not have been a sound one, but, nevertheless, both balsam of Peru and balsam of tolu act beneficially in some cases of chronic bronchitis and winter cough.

Balsam of Peru is best administered in doses of about half a drachm, made into an emulsion with mucilage or yolk of egg. The syrup of tolu, in tea-spoonful doses, is frequently used as a flavouring agent for cough mixtures.

Benzoin is obtained by making incisions in the bark of the Benjamin tree, growing in Sumatra, Borneo, and other islands of the Eastern Archipelago. The compound tincture of benzoin, or Friar's balsam, is an old favourite, and is known by a variety of names. Thus it is called indifferently "Tincture of Benjamin," "Balsam for Cuts," "Jesuit's Drops," and "Commander's Balsam." It is made as follows:—Macerate two ounces of benzoin in coarse powder, one and a half ounces of prepared storax, half an ounce of balsam of tolu, and one hundred and sixty grains of Socotrine aloes, in one pint of rectified spirit for seven days, with occasional agitation, then filter and add more spirit to make one pint of the tincture.

A piece of soft rag soaked in this preparation forms excellent protective for cuts and sores. Internally it is taken in tea-spoonful doses, beaten up with milk, usually for bronchial affections and old-standing winter coughs. The inhalation (Pr. 105), made by adding a tea-spoonful to a pint of hot water, is an excellent remedy for coughs and colds of all kinds.

For patients who are much from home and who find it difficult to use an inhaler, the vaporoles of Friar's balsam (V. 4) will be found useful. One or two may be crushed between the fingers and the contents inhaled from the hand or a pocket-handkerchief.

GALLIC ACID.—(*See* OAK-BARK, etc.)

GENTIAN.—The yellow gentian (*Gentiana lutea*) grows abundantly on the Alps of Switzerland and Austria, on the Apennines and Pyrenees, in the mountainous forests of many parts of Germany, and in North America. It thrives well in this country in a deep, rich loamy soil, and flowers about the end of June or the beginning of July, few plants being more stately and ornamental. The flowers are large and handsome, and yellow in colour, and are placed in whirls upon long stalks. The name of the genus was, it is said, conferred in commemoration of Gentius, a king of Illyria, who lived many years before Christ, and discovered the virtues of the plant. The portion of the plant used in medicine is the root, which is imported from Marseilles and other French ports. It is met with in long cylindrical pieces, wrinkled longitudinally, and often twisted. They have a sweet odour, and bitter taste, are brown externally, and yellow and spongy within.

There are four officinal preparations of the drug—an extract, a mixture, a tincture, and a compound infusion—all of which, with the exception of the extract, contain some other bitter.

The infusion contains, in addition to the gentian, orange-peel and lemon-peel; the mixture contains orange-peel and coriander-fruit; and the tincture, orange-peel and cardamoms.

The extract is often used as a basis for tonic pills, and the other preparations are used as bitters, either alone or in combination with acids or alkalies.

GENTIAN.

GUAIACUM.

The dose of the tincture is from half a tea-spoonful to a tea-spoonful, and of the infusion and mixture from two to three table-spoonfuls.

The compound infusion enters into the composition of our gentian and soda (Pr. 14), gentian and acid (Pr. 15), and gentian and senna (Pr. 16) mixtures.

Gentian is one of our best stomachic tonics, and is used to increase the appetite and promote digestion. It should be given about half an hour before meals.

GUAIACUM.—Guaiacum has at different periods of its career enjoyed a high reputation for the cure of many diseases.

It is the wood of a tree, some thirty or forty feet high, growing in Jamaica and the warmer parts of America. We usually see it in the chemists' shops in logs or billets, which are readily recognised from the central portion being almost black, and the surrounding wood of a much lighter colour. It is generally known as *lignum vitæ*—wood of life. It is very hard and heavy, and is frequently used for making rulers, skittle-balls, and other similar articles. The black central portion contains a large quantity of resin, which is obtained by allowing it to exude from the living trunk of the tree.

The best way in which to take this drug is as the ammoniated tincture of guaiacum, which is a solution of the resin in sal-volatile. It should be taken in tea-spoonful doses in about half a tumblerful of milk three or four times a day.

It may be employed with advantage in many kinds of chronic rheumatism, particularly in that form in which the symptoms are relieved by warmth. Rheumatism is such an obstinate complaint that any drug which will afford us even a chance of doing good should be thankfully received.

Guaiacum has a slightly laxative action. It is especially useful in the case of middle-aged men of sedentary habits, who suffer from torpidity of the bowels with all its attendant evils. These people derive much benefit from taking one or two guaiacum lozenges the first thing in the morning.

An excellent preparation is made by mixing guaiacum resin and honey in the proportion of ten grains to the drachm. The dose is a tea-spoonful once or twice a day, and it is useful not only as a laxative but in the treatment of rheumatism, lumbago, sciatica, and even quinsy.

GELSEMIUM, or GELSEMINUM.—This, the yellow jessamine, field jessamine, or woodbine (*Gelsemium sempervirens*), is a native of America, and is one of the most beautiful climbing plants of the Southern States. It ascends lofty trees, forming festoons from branch to branch, and in its flowering season, in the early spring, scents the atmosphere with its delicious odour. It belongs to the Loganiaceæ or nux vomica family, and is not in any way related to our common garden jessamine. It is extensively cultivated as a garden plant in many parts of America, not only for the beauty of its flowers and their rich perfume, but from the rapidity of its growth and the shade it affords. It begins to blossom early in March, and remains in flower until the end of May. It is not grown in England, and a specimen now at Kew is, we believe, the only one in this country. The portion of the plant used for medicinal purposes is the root, which is several feet in length and often an inch or more in diameter. It is doubtful whether the leaves possess any medicinal properties, and a tincture prepared from the flowers is comparatively inert.

Gelsemium was first used as a remedy for fever. It was introduced into practice by a curious accident. A planter of Mississippi, whilst labouring under a severe attack of bilious fever, which resisted all the usual remedies, sent a servant into his garden to procure a certain medicinal root and prepare an infusion of it for him to drink. The servant by mistake collected the root of the yellow jessamine and gave an infusion of it to his master, who in a short time became so completely paralysed that he was unable to move a limb or even to raise his eyelids, although he could hear and was cognisant of circumstances passing around him. His friends, greatly alarmed, collected about his bed, waiting the result with much anxiety, and expecting every minute to see him breathe his last. After some hours he gradually recovered, and was astonished to find that his fever had left him.

Curiously enough, cases of poisoning by gelsemium are in America by no means uncommon. A few years ago a medical man purchased five barrels of tincture of gelsemium, and was on his way home, when the vessel grounded on a sand bar on the Ohio river. In the process of shifting the freight the barrels were brought on deck, and in the hurry and confusion remained there unnoticed. During the night, however, the sailors, supposing it to be whisky, tapped a barrel and drew off a bucketful, which they commenced drinking out of tin mugs. In the morning they were all found lying perfectly helpless, and unable to move even a finger. It was for a time supposed that they were dead, but an appeal to the doctor decided the nature of the case, and by a judicious administration of stimulants they all ultimately recovered.

The activity of the drug depends upon the presence of a body known as *gelsemine*. It is a powerful poison, and in one case it was estimated that the quantity which caused death did not exceed a sixth of a grain. It exerts its influence chiefly on the muscles of respiration, and it has been found by experiments on animals that in cases of poisoning by this substance recovery will nearly always take place if artificial breathing be maintained until the drug is eliminated from the system.

The preparation of gelsemium most commonly used is the tincture.

The dose for an adult is from five to ten drops every four hours. In larger quantities it is apt to produce pain over the brows, dimness of vision, and giddiness.

Gelsemium may sometimes be substituted for aconite with advantage in the treatment of fever. It is said to be best adapted to the simple fever of childhood. When quinine is not obtainable it is useful in the treatment of ague.

It has obtained a great reputation in the treatment of neuralgia of the jaw. It is particularly useful in these cases when the complaint depends on the presence of a decayed tooth. In simple acute toothache it may be both given internally and applied locally.

GREGORY'S POWDER.—(*See* Rhubarb.)

GREY POWDER.—(*See* Mercury.)

GRIFFITH'S PILLS AND MIXTURE.—(*See* Iron, p. 90.)

HAMAMELIS VIRGINICA.—This is the witch hazel, a plant some ten or twenty feet high, growing abundantly in nearly all parts of North America. It is usually met with in stony places on elevated ground, and frequently on the banks of streams and borders of swamps.

In former times popular opinion attributed to it extraordinary powers of divination. In Michigan it is said to be still used for finding out hidden springs, and is likewise relied on for the discovery of treasures, mines, etc.

It is well known that hamamelis was held in the highest estimation by the Indians, and there can be no doubt that it is of considerable value as a curative agent.

Hazeline prepared from the fresh bark is more reliable than the official preparations. It is used largely for arresting bleeding, and proves equally efficacious, whether the blood comes from the nose, lungs, stomach, bowels, or other organ. It is especially indicated when the blood comes up easily, and the bleeding is not attended with any expulsive effort.

It has been used with success in cases of dysentery when there is much blood in the motions.

Hamamelis, in addition to its styptic properties, exerts a special influence on the veins; when administered internally it eases the pain of varicose veins of the legs, and when the internal administration is supplemented by its external application as a lotion, the veins gradually become smaller and smaller, and after a time resume their natural size.

In the treatment of bleeding piles hamamelis is one of our best remedies. For hæmorrhoids, or piles, it is almost a specific. A drop or two of the tincture, or ten drops of hazeline should be administered in a little water every three hours, or a smaller dose may be given more frequently.

For varicose veins and piles it is necessary to apply it externally as well, and for this purpose recourse may be had to lotion composed of equal parts of hazeline and water. For varicose veins the lotion should be applied on a piece of lint covered with a larger piece of oil-skin to prevent evaporation, and the whole limb should then be carefully bandaged.

HAZELINE.—Hazeline is an extract or aqueous distillate prepared from the fresh bark of the American witch hazel.

It is a clear pellucid fluid having an agreeable odour and pleasant taste, and is the best form in which to administer hamamelis.

It has the power of controlling in the most marvellous manner bleeding from all parts of the body, especially from the lungs, stomach, and bowels. It is the best remedy for piles.

It is also recommended in the treatment of all forms of catarrh. For catarrh of the nose or chest it should be used in conjunction with a "Vereker Chloride of Ammonium Inhaler."

Used as an injection it is an excellent remedy for leucorrhœa or "whites." It is given with advantage in the treatment of miscarriage and in certain painful conditions of the womb.

It should be taken internally in doses of fifteen or twenty drops every three hours in a wine-glassful of water.

As an injection it must be diluted with an equal quantity of water and used freely.

For bleeding piles it may be applied on lint without dilution.

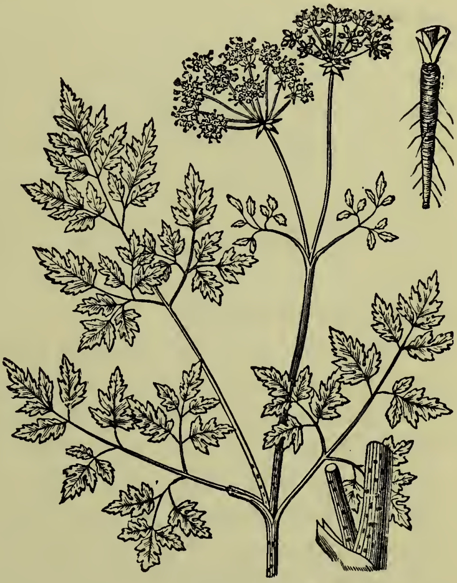
As a local application or dressing to ulcers it is excellent, and in the treatment of wounds, sprains, bruises, or contusions, is far superior to arnica. It is not poisonous, and may be given to children with perfect safety.

Hazeline cream, an ointment composed of hazeline and lanoline, is used not only as an application for piles but as a general substitute for cold cream.

Hazeline suppositories are hollow cones of coca-butter filled with hazeline. They are introduced into the lower bowel, and are used in the treatment of internal piles. The coca-butter melts with the heat of the body and sets free the hazeline.

The compound hazeline suppositories are composed of hamamelidin oxide of zinc, hazeline, and coca-butter. They are used in the treatment of fissure and fistula.

HEMLOCK.—The common spotted hemlock (*Conium maculatum*) is a tall umbelliferous plant, a native of Britain, and is found growing by the roadsides and hedges, and in waste places. It is distinguished from all other plants which it resembles by its tall smooth, spotted stem, its smooth leaves, the rugged edge of the five ribs of its fruit, and its peculiar mousy odour. The only other native plant belonging to this natural order having a spotted stem is covered with hairs. Cases of poisoning with hemlock are not uncommon, particularly on the Continent, the root being mistaken for fennel, asparagus, or parsnip. The leaves of hemlock have been occasionally substituted for parsley, although, considering their slight resemblance,. it is difficult to see how the mistake could have arisen. Such mistakes are frequently attended with disastrous results. Not long ago several French soldiers, wishing to improve the flavour of their soup, threw into the pot a quantity of hemlock leaves chopped fine. One of them, who partook rather freely of the *pot-au-feu* he had helped to prepare, became senseless in less than two hours, and died an hour later, his face being so livid that he looked as if he had been strangled. His companions, who had been more abstemious, or whose appetites had been less keen, ultimately recovered, although for many hours they all appeared to be intoxicated.



HEMLOCK.

Hemlock derives considerable historical interest from having been the State poison of ancient Athens, and the instrument of Socrates' death. The account, as narrated by his friend and disciple, Plato, of the last moments of the philosopher, and of the heroic calmness and resignation with which he met his fate, is of touching interest:—

"And Crito, hearing this, gave the sign to the boy who stood near. And the boy departing, after some time returned, bringing with him the man who was to administer the poison, who brought it ready bruised in a cup. And Socrates, beholding the man, said, 'Good friend, come hither; you are experienced in these affairs, what is to be done?' 'Nothing,' replied the man, 'only when you have drank the poison, you are to walk about until a heaviness takes place in your legs; then lie down: this is all you have to do.' At the same time he presented him the cup. Socrates received it from him with great calmness, without fear or change of countenance, and regarding the man with his usual stern aspect, he asked, 'What say you of this potion? Is it lawful to sprinkle any portion of it on the earth as a libation or not?' 'We only bruise,' said the man, 'as much as is barely sufficient for the purpose.' 'I understand you,' said Socrates, 'but it is certainly lawful and proper to pray the gods that my departure from hence may be prosperous and happy, which I indeed beseech them to grant.' So saying, he carried the cup to his mouth, and drank it off with great promptness and facility.

"Thus far most of us had been able to refrain from weeping; but when we saw that he was drinking, and actually had drunk the poison, we could no longer restrain our tears. And from me they broke forth with such violence that I covered my face and deplored my wretchedness. I did not weep for his fate so much as for the loss of a friend and benefactor, which I was about to sustain. But Crito, unable to restrain his tears, was compelled to rise. And Apollodorus, who had been incessantly weeping, now broke forth in loud lamentations, which infected all who were present except Socrates. But he, observing us, exclaimed, 'What is it you do, my excellent friends? I have sent away the women, that they might not betray such weakness. I have heard that it is our duty to die cheerfully, and with expressions of joy and praise. Be silent therefore, and let your fortitude be seen!' At this address we blushed, and suppressed our tears. But Socrates, after walking about, now told us that his legs were beginning to grow heavy, and immediately lay down, for so he had been ordered. At the same time the man who had given him the poison examined his feet and legs, touching them at intervals. At length he pressed violently upon his foot, and asked if he felt it, to which Socrates replied that he did not. The man then pressed his legs, and so on, showing us he was becoming cold and stiff. And Socrates, feeling it himself, assured us that when the effects had ascended to his heart he should then be gone. And now the middle of his body growing cold, he threw aside his clothes, and spoke for the last time, 'Crito, we owe the sacrifice of a cock to Æsculapius. Discharge this and neglect it not.' 'It shall be done,' said Crito; 'have you anything else to say? He made no reply, but a moment after moved, and his eyes became fixed. And Crito, seeing this, closed his eyelids and mouth."

It will be noticed that the symptoms of poisoning do not quite correspond with those described in the French soldiers who put hemlock in their soup. It is probable that the activity of the plant depends greatly on the season in which it is gathered, and on the soil in which it is grown. We are informed, on the authority of a Russian botanist, that peasants of his country eat the plant with impunity after it has been boiled several times in water, although why they should eat it at all we are not told.

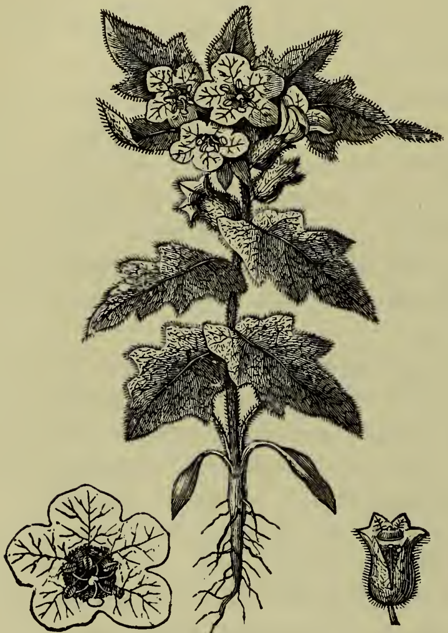
The only reliable preparation of hemlock is the prepared juice, known technically as *succus conii.* Some years ago the hemlock was vaunted as an internal remedy for cancer and all kinds of tumours. The encomiums bestowed upon it led to its universal adoption, but time, the greater leveller, has proved that, however benignly it sometimes acts when first administered, we cannot attribute to it virtues of so conspicuous and valuable a nature. At the same time, the pain of cancerous ulcers in the neighbourhood of the womb is often relieved by the use of conium, although frequently these effects are temporary, and the drug must be viewed only in the light of a valuable palliative.

In the early stages of shaking palsy, when only one limb is affected and the body is not weakened by disease and suffering, it may bring relief.

The hemlock juice should be given in twenty-drop doses three times a day, the dose being, if necessary, gradually increased to twice that quantity. The indications that the patient has had enough are drooping of the eyelids, sluggish movements of the eyeball, laziness of vision, with giddiness and weakness of the knees. Conium is in many respects allied to gelsemium.

HENBANE.—Common henbane (*Hyoscyamus niger*) grows wild in many parts of our island, particularly on the coast of Essex and Kent.

The English name has obviously reference to the injurious effects of the seeds on fowls. The whole plant has a strong fetid narcotic smell, and abounds in a clammy juice of a similar odour. The root has a sweetish taste—a circumstance which has caused it to be mistaken for parsnip. In its medicinal properties hyoscyamus corresponds in many respects to belladonna and stramonium. It is used chiefly as a substitute for opium, when the latter cannot be taken, or when its administration is undesirable. As a single dose for the relief of pain, half a teaspoonful of the tincture may be taken. Henbane is often added to purgative drugs to prevent them from griping. It enters into the composition of the calomel pill (Pr. 61).



HENBANE.

HOMATROPINE.—Homatropine is an alkaloid derived from atropine, the active principle of belladonna.

It dilates the pupil, but its action is much less persistent than that of the alkaloid from which it is derived. When atropine is placed in the eye it dilates the pupil to such an extent that the patient is practically blind for days afterwards, but when homatropine is employed this effect passes away in a few hours, and very little inconvenience is experienced.

Homatropine dries the skin and speedily checks the night sweating of consumption.

It may be conveniently given in the form of tabloids each of which contains one two hundred and a fiftieth of a grain. One of these at bed-time will usually afford relief, but in obstinate cases it may be necessary to repeat the dose in the early hours of the morning.

HYDRASTIS and HYDRASTIN.—The hydrastis canadensis, or golden seal, is a drug of American origin. It is a herb about a foot high, usually bearing two large leaves and a solitary flower. The root is the part used medicinally, and of this a tincture is made by treating one part with four parts of rectified spirit.

It is a tonic, and is used in the treatment of indigestion.

In simple constipation it may be given with advantage.

Its internal administration and local application have been recommended in cancer of the breast, but respecting the benefits obtained from this method of treatment there is considerable diversity of opinion. The dose of the tincture is ten drops every four hours. It often does good in piles, the internal administration being combined with the use of the lotion (Pr. 96), applied freely on lint, and renewed frequently.

From hydrastis is obtained a resinous body known as hydrastin. It is a cholagogue, that is to say it acts on the liver and increases the flow of bile. It should be given in two grain doses in a pill every night at bed-time, a saline draught being taken in the morning.

ICHTHYOL.—Ichthyol is derived by a chemical process from a peculiar bitumen found in the Tyrol.

It is useful in many chronic skin diseases. It should be given internally and employed locally. The tabloids, which are sugar-coated, contain two and a half grains in each, and one or two should be given three times a day after meals. For external use the ichthyol and lanoline ointment may be used. An ichthyol and lanoline soap is also made.

INDIAN HEMP.—The Indian hemp (*Cannabis indica*) is essentially the same as that so largely cultivated for the sake of its fibre. It was at one time supposed that there were two different species, but a careful examination and comparison have established the fact that our common hemp is identical with the plant which from the earliest times has been celebrated in the East for its intoxicating properties. The hemp came to us originally from Persia, although it is stated to be a native of India, but, like the tobacco and the potato, it has a wonderful power of adapting itself to exigencies of soil and climate, and is now widely distributed over the surface of the globe. The sap contains a peculiar resinous substance in which the esteemed narcotic virtue resides. In northern countries the proportion of this resin is so small as to have escaped general observation, but in the warmer regions of the East it exudes naturally and in considerable quantities from every part of the plant. In Central India it is collected during the hot season by men clad in leathern dresses, who run through the hemp fields brushing violently against the plants. The soft resin naturally adheres to the leather, and is subsequently scraped off and kneaded into balls. In other districts the dress is regarded as superfluous, and is dispensed with, the collectors appearing in the most primitive costume. The parts used in Asia for the purposes of intoxication, and in Europe as a medicine, are chiefly the leaves, the flowering tops, and the resin. It forms the intoxicating "bang" or "hashish" of the Eastern nations, and is known in India as "the leaf of delusion," the "increaser of pleasure," the "cementer of friendship," the "cause of a reeling gait," and the "laughter-mover." It can boast of considerable antiquity, and is probably the "assuager of grief" of which Homer speaks as having been given to Helen by Telemachus in the house of Menelaus. It is said that during the wars of the Crusaders the soldiers of the Saracen army when intoxicated with this drug were in the habit of rushing into the camps of the Christians and committing great havoc, being themselves totally indifferent to death. These men were known as "hashasheens," from which is probably derived our familiar word "assassins."

There are several ways in which the cannabis indica may be employed for the production of its intoxicating effects. Sometimes it is smoked, but the most common form of haschish, and that which is the basis of most of the other preparations, is made by boiling the leaves and flowers in water, to which a certain proportion of fresh butter has been added. The decoction is evaporated to the thickness of a syrup, and is then strained through cloth, the butter in the process becoming impregnated with the active resinous principle of the plant. In this form it retains its active properties for many years, turning only slightly rancid with age. Its taste is very disagreeable, and it is consequently usually taken mixed with spices and other aromatic substances so as to form a confection or electuary. All preparations of Indian hemp are capable of producing intoxication, the most prominent effect of a large dose being a pleasant delirium, followed by more or less exhaustion. With Orientals the inebriation resulting from its use is usually of an agreeable or cheerful character, exciting the individual to laugh, dance, and sing, and to commit various extravagances. The drug is credited with the power of producing true happiness, an enjoyment purely moral and ethereal, a gratification uncontaminated with "things rank and gross in Nature." The haschish-eater is happy, not like the gourmand, when he has satisfied his appetite, but rather like him who has just received tidings of great joy.

Bayard Taylor, in his "Pictures of Palestine," gives a most interesting account of the effects produced on himself by a dose of haschish taken experimentally. He was not an habitual haschish-eater, having used it only once before in Egypt, and then in a very mild form. The experiment was made in a caravansary in Damascus, and the drug was freshly procured by his dragoman. He was unacquainted with the strength of the mixture or the dose in which it should be taken, and he accordingly commenced with a tea-spoonful, allowing the paste to dissolve slowly in his mouth. He sat quietly for some time awaiting the result, but at the expiration of nearly an hour was unable to detect the least change in his feelings. He then took an additional half tea-spoonful, immediately followed by a cup of hot tea, to aid its absorption. This proved effectual, and a "fine nervous thrill," accompanied by a burning at the pit of the stomach, was suddenly experienced. The author in describing his sensations says:—

"The sense of limitation—of the confinement of our senses within the bounds of our own flesh and blood—instantly fell away. The walls of my frame were burst outward and tumbled into ruin; and without thinking what form I wore—losing sight even of all idea of form—I felt that I existed throughout a vast extent of space. The blood, pulsed from my heart, sped through uncounted leagues before it reached my extremities; the air drawn into my lungs expanded into seas of limpid ether, and the arch of my skull was broader than the vault of heaven. Within the concave that held my brain were the fathomless deeps of blue; clouds floated there, and the winds of heaven rolled them together, and there shone the orb of the sun. It was—though I thought not of that at the time—like a revelation of the mystery of omnipresence. It is difficult to describe this sensation, or the rapidity with which it mastered me. In the state of mental exaltation in which I was then plunged, all sensations as they rose suggested more or less coherent images. They presented themselves to me in a double form; one physical, and therefore to a certain extent, tangible; the other spiritual, and revealing itself in a succession of brilliant metaphors. The physical feeling of extended being was accompanied by the image of an exploding meteor, not subsiding into darkness, but continuing to shoot from its centre or nucleus—which corresponded to the burning spot at the pit of my stomach—incessant adumbrations of light that finally lost themselves in the infinity of space.

"My curiosity was now in a way of being satisfied; the spirit (demon, shall I not rather say?) of hasheesh had entire possession of me. I was cast upon the flood of his illusions, and drifted helplessly whithersoever they might choose to bear me. The thrills which ran through my nervous system became more rapid and fierce, accompanied with sensations that steeped my whole being in unutterable rapture. I was encompassed by a sea of light, through which played the pure harmonious colours that are born of light. While endeavouring, in broken expressions, to describe my feelings to my friends, who sat looking at me incredulously, I suddenly found myself at the foot of the great Pyramid of Cheops. The tapering courses of yellow limestone gleamed like gold in the sun, and the pile rose so high that it seemed to lean for support upon the blue arch of the sky. I wished to ascend it, and the wish alone placed me immediately upon its apex, lifted thousands of feet above the wheat fields and palm groves of Egypt. I cast my eyes downward, and to my astonishment saw that it was built, not of limestone, but of huge square plugs of cavendish tobacco! Words cannot paint the overwhelming sense of the ludicrous which I then experienced. I writhed on my chair in an agony of laughter, which was only relieved by the vision melting away like a dissolving view; till out of my confusion of indistinct images, and fragments of images, another and more wonderful vision arose. I was moving over the desert, not upon the rocking dromedary, but seated in a barque, made of mother-of-pearl and studded with jewels of surpassing lustre. The sand was of grains of gold, and my keel slid through them without jar or sound. The air was radiant with excess of light, though no sun was to be seen. I inhaled the most delicious perfumes, and harmonies such as Beethoven may have heard in dreams, but never wrote, floated around me. The atmosphere itself was light, odour, and music; and each and all sublunated beyond anything the sober senses are capable of receiving. Before me, for a thousand leagues, as it seemed, stretched a vista of rainbows, whose colours gleamed with the splendour of gems —arches of living amethyst, sapphire, emerald, topaz, and ruby. By thousands, and tens of thousands, they flew past me, as my dazzling barge sped down the magnificent arcade; yet the vista still stretched as far as ever before me. I revelled in a sensuous elysium which was perfect, because no sense was left ungratified. But beyond all, my mind was filled with a boundless feeling of triumph. My journey was that of a conqueror—not of a conqueror who subdues his race either by love or by will, for I forgot that man existed—but one victorious over the grandest, as well as subtlest, forces of Nature. The spirits of light, colour, odour, sound, and motion were my slaves, and having these I was master of the universe. The fulness of my rapture expanded the sense of time; and though the whole vision was probably not more than five minutes in passing through my mind, years seemed to have elapsed while I shot under the dazzling myriads of rainbow arches."

Sometimes the most ludicrous ideas are produced by the use of the hemp. One of Bayard Taylor's friends imagined, whilst under the influence of the drug, that he was a steam engine. He suddenly sprang from his seat to the floor exclaiming, with a shriek of the wildest laughter, "Oh, ye gods! I'm a locomotive!" This was his ruling hallucination, and for the space of two or three hours he continued to pace to and fro, with a measured stride, exhaling his breath in violent jets, and when he spoke dividing his words into syllables, each of which he brought out with a jerk, at the same time turning his hands at his sides as if they were the cranks of imaginary wheels. The delusion must, in this case, have been very perfect, for having raised a pitcher of water to his lips, to quench his thirst, he put it down again without drinking, exclaiming, in the greatest excitement, "How can I fill my boiler when I'm letting off steam?"

It is stated that all persons are not similarly affected by Indian hemp, and that race and climate exert a modifying influence on its action. It has been estimated that it is habitually used for its intoxicating effects by from two to three hundred millions of the human race, and there is evidence to show that, when indulged in for a length of time, it produces loss of appetite and strength, and considerable mental weakness.

The preparation of the drug most commonly used for medicinal purposes is the Extract of Indian Hemp, made from the flowering tops of the plant grown in India. It may be given in the form of pills (Pr. 67), one to be taken three times a day.

It may be combined with iron when there is anæmia, or any other indication for the use of that drug.

Cannabis indica is a valuable remedy for megrim or sick-headache. It acts like a charm, and is most serviceable in warding off attacks. It is useful in those severe forms in which the headache is continuous for weeks and weeks, but it is especially effective when from fatigue, anxiety, or change of life the attacks are increasing in frequency. In some cases of neuralgia benefit may be experienced from its use, but it is not one of our best remedies for this complaint.

IODINE — IODIDE OF POTASSIUM — IODIDE OF SODIUM — IODIDE OF STRONTIUM.—Iodine is made from "kelp," or the ashes of sea-weed collected in the north of Scotland and Ireland. When pure, iodine is a black crystalline substance somewhat resembling black-lead. It stains the fingers, and, on being gently heated over a flame, is converted into violet vapour, having an extremely pungent and disagreeable odour. It is most commonly used dissolved in spirit, in the form of a liniment or lotion, when it is readily recognised by its peculiar colour and odour.

Iodide of potassium is a combination of iodine with the base potassium, and differs very markedly in its appearance from iodine itself. It is a white crystalline salt, not unlike ordinary sea-salt. It is odourless, has a saltish taste, and dissolves readily in water.

There are two other salts of iodine in common use, the iodide of sodium, and the iodide of ammonium. The potassium salt has been longest in the field, and is probably the most largely employed, but the sodium is coming largely into favour. Iodide of strontium has only recently been prepared in a sufficiently pure state for internal administration, but several manufacturing chemists have recently devoted much attention to it, and many doctors now prescribe it in preference to the old-fashioned iodine of potassium, finding that it is less depressing and that it rarely produces a rash on the skin. The iodides of potassium, sodium, and strontium, can all be obtained in tabloids containing five grains.

Iodine is not suitable for internal administration, and its use is confined almost exclusively to its external application. There are several forms in which it may be used for this purpose, of which the "iodine liniment," the "tincture of iodine," and "iodine ointment" are the most useful. These differ chiefly in their strength, and consequently in their activity. The iodine liniment is made by mixing together an ounce and a quarter of iodine, half an ounce of iodide of potassium, a quarter of an ounce of glycerine, and half a pint of rectified spirit. The tincture is made by dissolving a quarter of an ounce of iodine and half that quantity of iodide of potassium in the spirit; whilst the ointment is made by mixing thirty-two grains each of iodine and iodide of potassium with a drachm of spirit and two ounces of lard. The liniment is not only the strongest, but the most useful preparation; but many people have such delicate skins that its application would cause too much irritation, and recourse is had either to the ointment or tincture. For children the liniment is much too strong, and the ointment should be used in preference.

In consumption tincture of iodine applied to the front of the chest under each collar-bone, often eases the cough and lessens the amount of expectoration when all the ordinary cough medicines have been tried in vain. The mode of application presents no difficulty. A little tincture is poured into a saucer and painted on the chest in a thin coat with a good broad brush. As soon as this layer is dried a second may be applied, but two are generally sufficient. The smell of the iodine often causes smarting and watering of the eyes, and it is consequently advisable to keep them shut whilst it is being used, or to turn the head away. A layer of cotton wool should be at hand to throw over the chest, so that the iodine may be prevented from touching and staining the linen.

The liniment causes considerable smarting for some minutes, and sometimes even for an hour or two. It is better on this account to apply it in the morning rather than at bed-time, so that rest may not be disturbed by the irritation.

Should the smarting really become unbearable the paint can readily be removed by washing the part with any kind of spirit that may be at hand, such as eau-de-Cologne, spirits of wine, or even brandy or whiskey, and the pain will then be quickly relieved by the application of a poultice. A solution of iodide of potassium in water will also remove it. These preparations of iodine seldom or never blister, and may be used in moderation with perfect safety. The outer skin, however, occasionally after some days peels off in little flakes, but without leaving any sore.

Many old-standing coughs not due to consumption may be relieved by a single coat of the liniment painted on the back. Iodine inhalations (Pr. 106, or V. 8) are also useful.

In many cases of stitch in the side the iodine liniment painted over the painful spot quickly affords relief.

People who have long suffered from gout and rheumatism with swollen joints may apply the iodine liniment with advantage, the swelling in a few days gradually subsiding.

In early and slight cases of ringworm a few drops of the tincture of iodine will often effect a cure, though frequently other measures have to be resorted to.

Iodide of potassium has acquired a great reputation in this country in the treatment of many old, long-standing diseases. It is the active ingredient in one or two patent medicines, and has made the reputation of several "world-renowned blood-purifiers," the other constituents being usually nothing more than a little burnt sugar and water.

This mixture often proves beneficial in rheumatism, particularly in that form which begins in the evening and lasts nearly all night, but ceases in the day-time. The fact of the pain being worse at night is usually to be regarded as an indication that the iodides will do good.

Pains in the bones occurring in middle-aged people, particularly if troublesome at night, often yield to these remedies. Nodes or tender swellings, or lumps on the bones, such as are sometimes met with on the skin, frequently disappear after a short course of these medicines. Painters' colic, and the numerous complaints from which painters, compositors, and others who gain their bread by working in lead, suffer, are relieved by iodide of potassium, which has the remarkable power of expelling the lead from the system.

That troublesome complaint, a cold in the head, may often be cut short by taking five grains of iodide of potassium at bed-time.

Most people can take iodide of potassium even in large quantities, and indefinitely, without suffering from it in any way. There are people, however, who are so susceptible to its influences that even a single dose of it will bring on a condition which is known as "iodism." In "iodism" there is a constant watery discharge from the eyes and nose, accompanied by a tight, uncomfortable feeling across the forehead. The sufferer is unable to bear the light, and generally shuts himself up in his room with the blinds drawn down, his time being chiefly occupied in alternately sneezing and blowing his nose. He generally imagines that he has a bad cold in his head, and says he can't think where on earth he caught it. On discontinuing the medicine this condition disappears almost as rapidly as it came, and the patient is puzzled enough to know why his cold got well so quickly. The addition of ten or fifteen drops of sal volatile to each dose of the mixture may prevent the occurrence of this condition, even in those who usually suffer from it. Should this addition fail to arrest the production of iodism, the patient should try the iodide of strontium.

IODOFORM.—Iodoform is prepared by the action of iodine on a hot solution of carbonate of sodium or potassium in dilute alcohol.

It is a crystalline substance which has a powerful characteristic and disagreeable odour.

It is a marvellous antiseptic and is the best application for soft chancres, which it usually cures in a few days, leaving no after-effects of any kind.

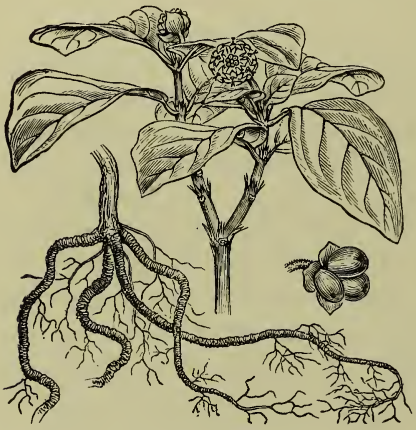
In many affections of the nose, especially those attended with a fetid, foul-smelling secretion, its effects are simply marvellous.

The only objection to its use is its decidedly objectionable odour, but this may be disguised, at all events to a very great extent, by mixing it with tonquin bean. It is now a pharmacopœial preparation, and may be obtained from any chemist without difficulty.

IPECACUANHA.—Towards the end of the seventeeth century ipecacuanha obtained in Paris a great reputation for the cure of dysentery.

There is a curious anecdote related respecting its first introduction to public notice, but as there are several different versions of it we take the liberty of telling the story in our own way. It appears that a merchant named Garnier, who had been attended by his physician through a long and dangerous illness, presented him, on his recovery, with a root which was said to be a positive cure for dysentery. The physician, however, being old, and having a good practice, was but little inclined to put faith in any new remedy. He postponed making a trial of the wonderful root from time to time, and finally gave it to his pupil, Helvetius, telling him to do what he liked with it. Helvetius, who was a very energetic young man, lost no time in administering it to several of his friends and patients who were suffering from dysentery, and the success of the treatment convinced him that he had indeed found a specific for that disease. He at once saw the value of his discovery, but instead of sharing it with the members of his profession, for the benefit of suffering humanity, determined to keep it a secret, and use it as a commercial speculation. He entered into a contract with the Willing of the period, and in a few days the whole city was placarded with bills, setting forth the manifold virtues of the new drug. The advertisement was in every paper, the hoardings were covered with gaily-coloured posters, sandwich-men promenaded up and down the boulevards, and you could not even go outside your door without being advised, in letters a foot long, to try "Helvetius's Anti-Dysenteric Pills." Time went on, dysentery was unusually prevalent, and at last it was known that the Dauphin, the son of Louis XIV., had contracted it. There were frequent consultations of the court physicians and surgeons, but still their royal patient got no better. At last, having exhausted every means at their disposal, they resolved to send for Helvetius. They could not meet him in consultation after his unprofessional conduct, but they told him they were willing to purchase his secret at his own price. He agreed to sell it for £1,000, a sum at that time worth very much more than now. The money having been handed over to Helvetius, he told them that his remedy was ipecacuanha. The truth of his statement was confirmed by the merchant Garnier, who opportunely put in an appearance and claimed a share of the profits.

Subsequently Helvetius repented of his evil ways, tore down the objectionable placards, was restored to professional favour, and finally ended by writing a learned and elaborate treatise on the uses and properties of his favourite drug.


IPECACUANHA.

Ipecacuanha is the root of a plant growing in moist woods near Pernambuco and Rio de Janeiro. As met with in the shops it is in irregular contorted pieces some three or four inches long, and of about the thickness of a small quill. It consists of two parts, an outer brittle portion, which is active, and of an almost inert, slender, tough, woody, central cord. The powder is of a pale brown colour, and has a nauseous and somewhat bitter taste.

Some people are very susceptible to the action of ipecacuanha, even the minutest quantity inducing in them symptoms somewhat resembling those of hay fever. This idiosyncrasy is a considerable inconvenience to those who, from the nature of their employment, are brought much in contact with the drug. A lady, the wife of a surgeon, could always tell when he was dispensing a prescription containing ipecacuanha, from the distressing tightness in the chest which she experienced. If by any mishap she happened to enter the surgery, even for a moment, whilst the drug was being powdered, she was almost immediately affected with violent and protracted sneezing. Sometimes this was followed by difficulty of breathing, cough, and spitting of blood. In some cases the paroxysms have lasted for days, and the subsequent exhaustion has been so great as to threaten the life of the unfortunate sufferer.

In larger doses ipecacuanha produces nausea and vomiting, accompanied by perspiration and a feeling of weakness. The quantity required to excite vomiting varies greatly in different people; with some the smallest dose is sufficient, whilst with others large doses are imperative. As a rule, fifteen grains of the powdered root, or a table-spoonful of the wine, will suffice to produce the desired result. It is often an advantage where time is not an object to administer an emetic in divided doses—a sixth part, for example, every three or four minutes. Children require almost as much as adults. Ipecacuanha may be described as an emetic which is mild, somewhat tardy, but certain in its action. It produces very little prostration; but the fact of its not acting instantly renders it a less valuable medicine than sulphate of zinc in cases of poisoning.

In the emetic draught (Pr. 27) the ipecacuanha and sulphate of zinc are combined. It is certain and prompt in its action. Vomiting may be promoted by draughts of hot water.

The most commonly employed preparation of ipecacuanha is the wine, which is made as follows:—

Macerate one ounce of ipecacuanha in coarse powder in one pint of sherry for seven days, with occasional agitation; strain, press, and filter, then add sufficient sherry to make it up to a pint.

We will now consider the therapeutical applications of ipecacuanha—the diseases in which it proves most beneficial, and its mode of administration.

In the first place, as regards dysentery, the disease in which it won its laurels. It is necessary in these cases to administer the drug in large doses, or but little benefit will be obtained from its employment. From sixty to ninety grains of the powder should be given as a dose, and repeated in from ten to twelve hours if necessary. This large dose does not as a rule produce nausea or sickness, but should these symptoms arise they may be obviated by making the patient lie down immediately after taking the medicine. In old, long-standing cases not requiring prompt treatment it is a good practice to administer the first dose at night when the patient is in bed. Should the first few doses excite sickness the medicine need not be discontinued, as this symptom passes off in a few days. Frequently the beneficial effect of the treatment is almost instantaneous, the motions even in the very worst cases becoming natural in frequency and character, and relief being obtained from the straining and griping.

Some forms of diarrhœa in children may be admirably treated with ipecacuanha. The indications for its employment are vomiting, purging, and the stools being tinged with blood. If given hourly, in half-tea-spoonful doses of the mixture (Pr. 50), it will often succeed in removing the sliminess of the stools, even when the other symptoms are absent. The vomiting, when present, is usually arrested before the diarrhœa.

Few remedies are more efficacious in checking some kinds of vomiting than ipecacuanha, given according to Pr. 50. It is the best remedy for the vomiting of pregnancy. This distressing complaint usually occurs only in the morning, frequently on getting out of bed, or whilst in the act of dressing. If relief be not speedily obtained from the mixture taken in the ordinary way, a dose should be given on awakening, and before any attempt is made to move. Sometimes the nausea and vomiting come on before or immediately after every meal, so that the unfortunate patient is in danger of dying of starvation in the midst of plenty. Ipecacuanha is *the* remedy in these cases. Sometimes, though rarely, the vomiting of pregnancy fails to yield not only to this but to every other medicine. It is probable that in many of these cases it is dependent on a displacement or alteration in the shape of the womb, which would require treatment by an obstetric physician, or one who has devoted especial attention to this branch of medicine. Many women who, during their pregnancy, have been free from nausea and vomiting, suffer from both these symptoms when they are suckling. They may be so constant and severe as to greatly exhaust the strength of the mother, and to compel her to wean the child prematurely. This condition is admirably treated by tea-spoonful doses of the ipecacuanha mixture three or four times a day.

Ipecacuanha undoubtedly exerts a powerful influence on the bronchial tubes, and is one of the chief ingredients in nearly all our cough medicines and lozenges. The wine, used as an inhalation, in the form of spray, is undoubtedly the best treatment for chronic bronchitis (*see* BRONCHITIS).

In many cases of whooping-cough, Pr. 50 does good; the indications for its administration are the occurrence of retching and vomiting.

Ipecacuanha has been employed with success in all forms of bleeding, but especially in bleeding from the bowels. In some very severe forms of flooding a tea-spoonful dose of ipecacuanha wine has arrested the flow, and rescued the patient from a most critical condition.

IRON.—For more than 3,000 years iron has been used in medicine. It was known to the antediluvian patriarchs, and it is probable that it was the first mineral used internally. By the alchemists it was called Mars, and was represented by the symbol ♂.

It is a constant and necessary constituent of the body, and enters largely into the composition of the colouring matter of the blood. Iron is essentially a blood tonic, or "blood maker." It possesses the power of improving the quality of the blood, by restoring to it those principles in which it is deficient. In the condition known as "anæmia," or "poorness of the blood," there is a deficiency of iron in the system, and the administration of this element will effect a cure, almost as certainly, though not so quickly, as food will cure hunger or water thirst.

The preparations of iron are numerous, but it is used in the treatment of so many diseases that this is a great advantage. We cannot do better than review in detail some of the most useful of these preparations.

Steel Wine is a favourite form in which to administer iron to children. It is made by suspending for a month an ounce of iron wire in a pint bottle of sherry in such a manner that it is very nearly, but not quite, immersed. The bottle should be frequently shaken, and the stopper removed. When the process is complete the wine should be strained, and is then ready for use. The best wire to use for this purpose is what is known in the trade as No. 35. Some people substitute malaga for sherry, and the iron wine so made, if not better, has certainly the advantage of being sweeter. A mixture of sherry and malaga is very palatable. The dose for a child is one or two teaspoonfuls. For an adult a small wine-glassful may be taken with a biscuit for lunch. It is a mistake to regard such an agreeable preparation as a medicine. The only disadvantage of taking a large dose is that it is apt to confine the bowels. Burrough's Beef and Iron Wine is an excellent preparation.

In Devonshire and some other parts of the country cider is used instead of the wine. A handful of iron nails or thin wire is thrown into a bottle of cider, and allowed to digest for a week. A wine-glassful is taken three times a day. This form is not officinal in England, but is recognised in Germany.

Reduced Iron, so called from being reduced in its preparation from an oxide of iron, is a fine greyish-black powder which is strongly attracted by the magnet, and exhibits metallic streaks when rubbed with firm pressure in a mortar. It is insoluble in water, but being in a finely divided state is readily dissolved by the acid juices of the stomach. It is a most powerful remedy for restoring the condition of the blood, and it can be conveniently administered to children, as it is almost destitute of taste, and but a very small dose is required. The iron powders (Pr. 76) will be found useful, and may be placed on the tongue or mixed in food three times a day.

Reduced iron can also be obtained as-reduced iron lozenges, each containing one grain. From one to six may be taken as a dose.

The *Moist Peroxide of Iron* is made by precipitating a solution of persulphate of iron with soda, collecting the precipitate on a calico filter, and preserving without drying in a well covered vessel. It is a pasty mass of reddish-brown colour. It is not much used in the treatment of disease, but it is a valuable antidote in cases of arsenic poisoning, in which it is given in table-spoonful doses as fast as the patient can swallow it. When dried and powdered this preparation is used for making chalybeate plaster, which is used for lumbago and other complaints, when warmth and rest are desirable.

Griffith's Mixture, or compound iron mixture, is made as follows:—Rub together in a mortar a drachm each of myrrh and sugar and half a drachm of carbonate of potash, make them into a thin paste with a little rose water, then add gradually more rose water and four drachms of spirit of nutmeg until nearly half a pint of milky fluid is formed. Then add twenty-five grains of green vitriol dissolved in about four table-spoonfuls of rose water, and stir it all thoroughly together, when there will be about half a pint of mixture. The bottle in which it is kept should be quite full and tightly stoppered, so as to exclude the air. In a few days the mixture decomposes, losing its grass-green colour and becoming yellowish-brown, when it is no longer fit for use. This mixture has obtained a great reputation for restoring the periods in young pallid women in whom they have temporarily ceased. It should be taken in doses of two table-spoonfuls or more three times a day, the treatment being commenced a week or ten days before the expected time.

Griffith's Pills, or carbonate of iron pills, are sometimes used for a similar purpose, but are far less successful; one or two may be taken three times a day.

These preparations were first used by Dr. Moses Griffiths, a physician of the last century.

Tincture of Steel, or tincture of perchloride of iron, is one of our most valuable preparations of iron. It is decidedly astringent in its action, and some people have a difficulty in taking it. For those who like iron, and with whom it agrees, twenty drops of tincture of steel may be taken in a glass of water three times a day. For those who are not accustomed to its use Prs. 1 and 2 are to be preferred. The chloric ether and glycerine disguise the taste and lessen the roughness of the iron, whilst the quassia as a stomachic bitter improves the appetite.

Green Vitriol, or *Sulphate of Iron*, is another very valuable preparation of iron. It is an old, old drug, which was used by the Romans in the time of Pliny for making ink. It is prepared by dissolving iron wire in oil of vitriol and crystallising the solution. It is met with in beautiful light bluish-green crystals, which when dissolved in water form a solution having a very astringent taste. The crystals and solution on exposure to air gradually assume a dirty brown colour, an indication that they are decomposing and have deteriorated in character. By strongly heating the crystals, the water which they always contain is driven off, leaving the dried sulphate of iron.

This is, weight for weight, nearly twice as strong as the crystals. It is used in the preparation of sulphate of iron pills (Pr. 63). These pills contain nothing but dried sulphate of iron and one drop of syrup to make them coherent. A little care and knack are requisite to make them, but there is no real difficulty. When made they should be as hard as a marble, and should they not exhibit this character, it is to be taken as an indication that there has been some error in their preparation. Sulphate of iron is often given with aloes, as in Pr. 64.

Syrup of Iodide of Iron.—This is made by the direct combination of iron with iodine. The only objection to its use is that it is apt to decompose when exposed to the light or air. The decomposition may be to some extent obviated by suspending in the fluid a coil of iron wire. It is administered when we wish to give iodine, and at the same time desire the tonic and blood-making power of the iron. The dose is from twenty drops to a tea-spoonful, which may be given in water. It is one of the ingredients of Pr. 4.

Phosphate of Iron is a slate-blue amorphous powder, insoluble in water. It is often used in cases of rickets and other affections of the bones, in which the use of iron is indicated. It may be given, freely diluted with water, in the form of syrup of phosphate of iron, each spoonful of which contains one grain of the phosphate. The dose of the phosphate of iron is from five to ten grains. Pr. 4 contains both the phosphate and iodide of iron.

Dialysed Iron is a mild non-astringent preparation, and is taken without difficulty.

Parrish's Chemical Food contains in each tea-spoonful one grain of phosphate of iron, two grains and a half of phosphate of lime, with potash and soda. The dose is one or two tea-spoonfuls in a little water, three times a day.

Easton's Syrup is said to contain in each tea-spoonful one grain each of phosphate of iron and phosphate of quinine, and one thirty-second of a grain of strychnia, besides syrup and water. The dose is a tea-spoonful in water three times a day. The presence of strychnia in this preparation should be borne in mind, as an overdose would undoubtedly be attended with unpleasant consequences.

Blaud's Pills are made from sulphate of iron and carbonate of potassium. It is probable that a double decomposition takes place, carbonate of iron being formed. These pills are largely employed in many parts of the country.

Citrate of Iron and Ammonia.—This is a mild preparation of iron, which, from its freedom, astringency, and agreeable taste, is readily taken by children and delicate people. It is made in thin, shiny scales of a beautiful hyacinth-red colour. It is soluble in water and in most infusions, and should be given in doses of from five to fifteen grains. Pr. 3 is an agreeable form in which to take it.

Citrate of iron wine is made by dissolving 160 grains of citrate of iron and ammonia in a pint of orange wine, shaking it occasionally, and at the end of the third day filtering it, when it is ready for use. The dose is from a tea-spoonful to a table-spoonful.

Tartarated Iron, like the citrate, is a "scale" preparation. It occurs in thin, transparent flakes of a deep garnet colour. It is slightly sweetish and astringent in taste. A solution in water is sometimes, on account of its cheapness, used as a substitute for steel wine. Such economy in the treatment of the sick is undesirable, and is in reality but another name for reckless extravagance.

Citrate of Iron and Quinine is an elegant preparation combining the properties of iron and quinine. Its thin, golden yellow scales have a chalybeate and bitter taste, and may be taken in ten-grain doses in any aromatic water. It may be given, too, in an effervescing form, as in Pr. 7.

Iron is largely employed in the form of tabloids. The dialysed iron tabloids contain ten drops in each; the reduced iron tabloids contain two grains in each; the citrate of iron and quinine tabloids, three grains, and the Blaud's pill tabloids four grains. These tabloids are small, and are swallowed without difficulty. The average dose for an adult is two three times a day after meals.

In speaking of the different preparations of iron it will have been noticed that some, such as the tincture of steel, are described as being astringent, whilst others are said to be destitute of astringent properties. The astringent preparations are undoubtedly the most valuable, but as they sometimes upset the stomach, recourse must be had occasionally to those which are milder and less active. Iron salts have this disadvantage, that they frequently temporarily discolour the teeth, and stain the tongue black. Some people on this account take all mixtures containing iron through a quill or straw, sucking them up with as much gusto as if they were drinking sherry cobbler. Such a precaution is almost superfluous, for just brushing over the teeth with a tooth-brush and rinsing out the mouth with a little tepid water will generally suffice to ease the minds of even those who are most particular respecting their personal appearance.

The long-continued use of iron has a tendency to confine the bowels, a point to which attention should be directed. The difficulty may be overcome by the occasional use of a saline purgative. Many medical men consider that the addition of a laxative to an iron preparation increases the activity of the latter. Should the perchloride of iron mixture prove too binding, half a tea-spoonful of Epsom salts or five drops of tincture of belladonna may be advantageously added to each dose.

Iron salts colour the stools black, a condition which need excite no alarm, as it is a natural consequence of the administration of the medicine.

There are individual peculiarities with respect to iron, just as there are in regard to iodine and many other medicines. Many people tell you that it is no use recommending them iron, because they cannot take it. They "never could take it," it always "upsets the stomach," and brings on "a nasty fulness about the head." They will take anything but iron, but iron they cannot and will not take. This, as a rule, means nothing more than they have not yet found a preparation of iron that will suit them, and when iron is the only remedy that will prove of benefit, our chances of curing them depend solely upon our ability to find some form of iron which will not inconvenience them. The sulphate of iron pill (Pr. 63), a strong and valuable preparation, may often be administered under these circumstances, when everything else has failed. In all cases it is advisable to occasionally humour the stomach by changing the form in which the iron is given. The continuous use of the same mixture for any length of time is apt to become distasteful, merely from its constant repetition, if from nothing else. It is almost as bad as being confined to one article of diet.

It has been said that people of a sanguine temperament owe their disposition to an excess of iron in the blood, and that the phlegmatic temperament is caused by a deficiency of that constituent. We fear that it can hardly be claimed for iron that its administration has the power of improving the disposition. If this fact were established there are a good many people who might be benefited by a course of this tonic.

Let us now turn our attention to the consideration of those diseases in which iron is likely to prove of service.

In the first place, it is to be regarded almost as a specific for anæmia, or bloodlessness. One so frequently sees people, both men and women, suffering from this condition, that its indications are hardly likely to have escaped our attention. The sufferer is pale, languid, listless, and generally out of sorts. The colour has flown from his cheeks, and the ruddy hue of health has given place to that pale flabbiness which is a sure indication of ill-health. His work is a trouble instead of a pleasure; he no longer takes any interest in it, and probably says, or at all events feels, that everything is a bore and a nuisance. His appetite is poor, he generally suffers from indigestion, and very frequently from some disturbance of the bowels. If you examine his nails, or turn down his eyelids, or look at the inside of his lips, you will find that they are white and pale instead of presenting their natural florid red colour. This is a formidable list of symptoms, but the condition is fortunately one which can be readily and quickly remedied by full doses of the perchloride of iron mixtures (Prs. 1 and 2), or by taking the sulphate of iron pills (Pr. 63). The patient should of course live as well as possible, and, above all, take plenty of out-door exercise.

Many young and delicate women who suffer from irregularity of the periods become anæmic to such an extent that their complexion assumes almost a greenish hue. This condition, known as chlorosis or green sickness, is readily controlled by the use of iron. As an old writer says: "It is good to cure maidens of the greene sicknesse, and sends againe the lively colour into their faces." The systematic use of the iron pills is almost invariably attended with the most satisfactory results. A pill three or four times a day will in a week produce a very marked improvement. The patient's natural colour quickly returns, and the rosy hue of health once more mantles the cheeks which it seemed to have forsaken for ever. Iron is equally beneficial in cases in which the paleness is the result of some sudden loss of blood, or of a long continued and exhausting discharge. It supplies the pabulum of which the system has been drained.

Bleeding from the lungs, kidneys, or stomach, is often controlled by tincture of steel taken in a little water. The less astringent preparations are of comparatively little service in these cases.

Many complaints, such as epilepsy, hysteria, and neuralgia, are greatly aggravated by the co-existence of anæmia. Iron, by removing this condition, will often lessen the severity of the attacks, Nature, with a new means at her disposal, making a fresh effort to restore the balance of health. The effervescing iron mixture (Pr. 7) may be taken at intervals with advantage.

Many children suffering from St. Vitus's dance will be found on examination to be paler than natural, and the administration of some mild form of iron, such as the citrate of iron mixture (Pr. 3) or the iron powders (Pr. 76), will often, by the removal of the impoverished condition of the blood, cure the complaint.

It may be laid down as a rule that when a patient is markedly pale, iron in some form or other will prove beneficial. Even in Bright's disease, and in disease of the heart, iron, although it may be useless as a curative agent, will often mitigate the intensity of some of the most distressing symptoms, and at all events give temporary relief.

In diphtheria and in erysipelas large doses of iron should be administered. Fifteen to twenty drops of the tincture of steel, given every hour in water for several consecutive hours, will do much to lighten the severity of the attack. The frequent repetition of the medicine is the essential condition for the attainment of success.

For the removal of those abominable little thread-worms which so frequently infest the lower bowel, an injection containing tincture of steel is very efficacious. The injection is made by adding half a teaspoonful of tincture of steel to a pint of water, and throwing this, by means of a syringe, well up into the bowel. The iron coming into contact with the parasites quickly destroys them, and they are then expelled without difficulty. The use of the iron in the form of an injection is necessary, it is almost useless to take it in the usual way—by the mouth.

JABORANDI AND PILOCARPINE.—The words jaborandi, jamborandi, and iaborandi, are employed in Brazil to denote any tree or shrub which has the power of producing sweating. In this country we mean by jaborandi the leaves and young shoots of the pilocarpus pinnalifolius obtained in Brazil. The shrub is about four feet high, and flowers in spring and early summer. It is collected chiefly in the neighbourhood of Pernambuco, where it grows in the forest clearings and on the slopes of the hills. It has long been employed by the natives as a remedy for snake bite, and in the treatment of fever.

The action of jaborandi can be illustrated in a very simple way. The patient should be put to bed in a warm room and covered up with blankets. A drachm of jaborandi leaves cut up small is then infused in a small tea-pot for half an hour. The clear fluid is then poured off and swallowed. Almost immediately the patient breaks out into a profuse perspiration, and begins to spit. All the secretions are increased with the exception of the urine. This action usually continues from half an hour to three-quarters of an hour, when the patient falls into a deep sleep and awakes feeling perfectly well.

This mode of treatment may be employed in many complaints. For example, when as the result of exposure to wet and cold, that patient has got a chill, or when from exposure to night air in malarial districts, he has a " touch of fever." It is useful, too, in rheumatism, in sciatica, in lumbago, and a host of painful complaints. There is no disease in which it does more good than dropsy. When the legs swell and become puffy, and pit on pressure, a good sweating with jaborandi is the thing to try.

Jaborandi is quite the remedy for travellers in unexplored districts where fever is common and medical advice is difficult to obtain.

It may be objected that this mode of making the medicine is cumbersome, and that travellers do not go about with tea-pots and other similar utensils. We admit this, and will explain how the difficulty may be obviated.

Jaborandi contains an active principle, an alkaloid named pilocarpine, which possesses all the properties of the plant from which it is derived. This pilocarpine is compressed into tabloids each containing a dose of the medicine. Instead of carrying a bundle of jaborandi leaves and a tea-pot, the traveller slips into his pocket-book a little tube containing a dozen or more of these tabloids, and in the smallest possible compass it has means of throwing half the camp into a perspiration.

The mode of procedure with these tabloids is just the same as with the jaborandi leaves, with this exception, that the tabloids require no preparation.

The patient suffering from fever, or ague, or rheumatism, or whatever it may be, turns in early and wraps himself up in a blanket so as to get thoroughly warm. He then takes one of the tabloids, swallowing it just as it is, or with a mouthful of water. In a few minutes the perspiration commences, and the patient is relieved of his troubles.

The dose of pilocarpine for an adult is half a grain.

Pilocarpine possesses no poisonous action and, although its effects are sometimes startling, there is a complete absence of danger.

It is a curious fact, and a very interesting one from a physiological point of view, that the whole action of jaborandi or pilocarpine can be checked and counteracted almost in a moment by the smallest quantity of either belladonna or its active principle atropine.

Let us take an example. A patient has gone to bed and has taken a half-grain tabloid of pilocarpine. He is in a profuse perspiration when from some unexpected call of duty, or other unforeseen cause, he finds himself compelled to get up and go on. To do so in a state of profuse perspiration and salivation would obviously be dangerous. The remedy, however, is simple. All he has to do is to swallow a one-hundredth of a grain tabloid of atropine, or if there is no atropine at hand, to take ten drops of tincture of belladonna in a little water. Almost in a moment the sweating ceases, and after the brisk application of a rough bath towel the patient is fit for anything.

We would strongly urge colonial travellers and others remote from medical aid, to furnish themselves with a good supply of half a grain tabloids of pilocarpine.

JALAP and SCAMMONY.—These drugs are both yielded by plants belonging to the natural order of which our common convolvulus is a member. By jalap we mean the dried roots of the jalap plant, a native of Mexico, imported from Xalapa, or Jalapa, the city from which the name of the plant is derived. Scammony is a resin obtained from the dried root of a species of convolvulus, growing in Syria and Asia Minor. It occurs in irregular masses, of a blackish-green colour and musty odour. It is most extensively adulterated, the best scammony often containing less than one-third of the real drug, the rest being a compound of starch, woody fibre, gum, and earthy matter, including chalk.

Both jalap and scammony are purgatives, and are employed in cases of obstinate constipation. The former is best administered as the compound jalap powder, which consists of jalap, acid tartrate of potash, and ginger. The dose of this is for an adult from ten to thirty grains. In dropsy a fifteen-grain dose may be given with advantage every morning or on alternate mornings, for a brisk watery purge serves to carry off the excess of fluid from the body and limbs. There is a similar preparation of scammony known as compound scammony powder, containing scammony, jalap, and ginger. It is used as a purgative in from ten to twenty-grain doses. To children it is given in doses of from three to five grains.

KINO.—(*See* CATECHU, KINO, etc.)

KOUMISS.—The treatment of consumption and other wasting diseases by fermented mare's milk has of late years attracted considerable attention.

The treatment in its integrity can be carried out only in conjunction with a visit to the steppes of European Russia, and of Central and South-Western Asia. Some years ago such an undertaking for an invalid would have been an impossibility, but thanks to modern facilities for travel, it is possible to reach the town of Drenbourg, on the borders of South-Western Asia, with but thirty-three hours railway travelling, which are not even consecutive. It must be remembered that Petersburg can be reached from Hull or Leith for five pounds. The railway journey from Petersburg to Moscow is performed in a single night, and the carriages are so comfortable in every way that not the slightest inconvenience is experienced. A train leaving Moscow in the evening reaches Nijni-Novgorod in the early morning. From Nijni the trip down the Volga to Samara is accomplished in forty-three hours, in a large, fast, and comfortable steamer. From Samara it is only fifteen hours railway journey to Drenbourg.

There are several koumiss establishments in the neighbourhood, of which particulars can be obtained without difficulty. The climate is magnificent, and the life is most interesting. The air is so pure and fresh that the sufferer feels invigorated, and in a very short time improves in appetite and gains flesh.

Many hundreds of consumptives from all parts of Europe go to the steppes every year, and a very large proportion of them are completely restored to health. English people go very little, partly because they know little or nothing about it, and partly because they regard Russia as being a more or less uncivilised country. If they do go they usually postpone their departure until death stares them in the face. It must be remembered that cases of incipient phthisis do well, whilst cases of advanced consumption are far less favourable subjects for treatment.

But it may be said why not take koumiss in England. In the first place the koumiss sold in England is made from cow's milk and not from mare's milk, and is not the same thing at all. In the second place the climate, mode of life, exercise in the open air, and other conditions which are met with among the Tartars, are not to be obtained amongst more civilised nations. The young man threatened with consumption might do worse than take a six months' holiday, and go and live among the Tartars.

LAUDANUM.—(*See* OPIUM.)

LANOLINE.—Lanoline is largely employed as a basis for ointments, and has almost superseded the old-fashioned lard. It consists of cholesterine fat, and is extracted by an ingenious process from sheep's wool. It has the consistence of thick cream, has an agreeable odour, and will mix with water in almost all proportions. It cannot become rancid and never undergoes decomposition.

Lanoline is most useful in the treatment of skin diseases. The old-fashioned ointments were nasty evil-smelling substances, which no one liked, whilst lanoline is easy of application, and is rapidly absorbed by the skin. It combines with almost any drug and may be used under all circumstances to replace lard and other forms of fat. It makes excellent soap and excellent pomade, and can be employed in various forms for toilet purposes.

The lanoline ichthyol soap, and the lanoline ichthyol ointment, are used in all forms of parasitic skin diseases, such as itch and ringworm, and also in the treatment of chronic eczema and psoriasis.

The hazeline cream which is made with hazeline and lanoline, is an excellent application for piles, fissure, and fistula. The lanoline eucalyptia soap is a good disinfectant, whilst lanoline toilet soap and lanoline cold cream will be found to answer many useful purposes.

LEAD.—The oxide of lead is known as "litharge," and is largely employed in making plasters. It is formed when melted lead is exposed to a current of heated air, and is usually procured during the process of extracting silver from lead ore. It occurs in pretty scales of a pale brick-red colour.

The "lead or diachylon plaster" is made by boiling together four pounds of powdered litharge, one gallon of olive oil, and three and a half pints of water, keeping them simmering for four or five hours, and stirring constantly until the mass has acquired a proper consistence to be spread on calico. The ordinary "sticking plaster" is made by adding to every two pounds of the melted diachylon plaster four ounces of resin and two ounces of hard soap. "Soap plaster" differs from the latter in the proportions of lead and resin, there being added to every two and a quarter pounds of melted diachylon plaster six ounces of hard soap and one ounce of resin. We need hardly say that only under very exceptional circumstances would it be necessary to make these plasters one's self, for unless a large quantity were required those obtained from the chemist would be in all probability equally good, and undoubtedly cheaper. At the same time it is desirable to be acquainted with the composition of these different plasters, as they differ somewhat in their uses and properties. The diachylon plaster is much valued for its adhesiveness, smoothness, and complete freedom from irritating properties. It forms an excellent strapping for parts requiring support, and is employed for keeping the surfaces of wounds in contact. The ordinary sticking-plaster is still more adhesive, but its use is occasionally objectionable on account of its irritating properties. The soap plaster is frequently used as an application to tender or abraded surfaces.

A stout lead plaster will often relieve pain in the loins dependent on general weakness. Pains in the back due to piles or some derangement of the womb are often cured by the same means. Plasters occasionally cause intolerable itching from the retention of the sweat, but this difficulty is readily obviated by punching them at regular intervals with a number of little holes somewhat larger than a pin's head.

Acetate of lead, or sugar of lead, is made on a large scale from litharge. It is a white, spongy-looking mass, composed of brilliant, but minute needle-shaped crystals, having a sweetish taste. It dissolves in water, forming a clear or slightly milky fluid. Sugar of lead is undoubtedly a poison; but it is much less energetic in its action than is generally supposed. Upon one occasion, by some accident, about thirty pounds of this substance were mixed at a miller's with eighty sacks of flour, and the whole was made into bread by the bakers, and supplied as usual to their customers. No fewer than five hundred people were attacked with symptoms of poisoning after partaking of this bread, but not one of the cases proved fatal. The symptoms produced by an over-dose are a dry, burning sensation in the throat, thirst, vomiting, colic, great prostration, and cramps in the limbs.

Slow poisoning from the continuous and prolonged introduction of lead into the system is by no means uncommon. There are many ways in which this may arise, and it is not always easy to detect the source of the mischief. It is frequently met with among workmen whose occupations bring them habitually into contact with preparations of lead. Painters, who use white-lead in the preparation of their colours, so frequently suffer from one of its most prominent symptoms that the complaint is often known as "painters' colic." Card-glazers and paint-grinders are subject to the disease, whilst compositors, from handling leaden type, are sometimes disabled by it. Lead miners, and more especially those who are engaged in smelting the metal, become early acquainted with the disease and its attendant dangers. The workmen who are employed to whiten Brussels lace, by beating white-lead into the fibre, constantly breathe an atmosphere of this poisonous salt, and frequently suffer from lead-poisoning.

It is not, however, by any means confined to those who earn their bread by the sweat of the brow, for it is introduced into the system in so many different ways, that everyone, the richest and poorest, may suffer from its effects.

Drinking-water which has been kept in leaden tanks or has been conveyed for any distance through leaden pipes is a fruitful source of mischief. Some years ago a contractor undertook to supply a town in the west of England with water from a spring some quarter of a mile distant. Leaden pipes were laid down for the purpose, and in a few weeks after the opening of the new supply there were a large number of cases of lead-poisoning, the teetotalers more especially being sufferers. The inhabitants became alarmed, the matter was investigated, and the water supplied in the town—although at the spring perfectly pure—was found to be largely contaminated with lead. The leaden pipes were replaced by iron pipes, and the epidemic of lead-poisoning, which had so quickly arisen, soon disappeared.

Home-made wines are often contaminated with lead from being carelessly allowed to ferment in jars glazed with a composition containing lead. Shot used for cleaning bottles is accredited with the power of causing lead-poisoning if not removed before bottling the wine. Formerly, chronic lead-poisoning was so prevalent in Devonshire that an inquiry was instituted into the origin of what was called the *Devonshire colic.* In the first place it was found that it occurred chiefly in persons who drank the cider there manufactured, and by degrees the malady was traced to the admixture of lead with the cider, either designedly for the purpose of sweetening it, or by the inadvertent employment of lead in the construction of the cider mills and vats. Under somewhat similar circumstances arose the colic of Poitou. Preparations of lead were largely used to prevent the wines of the country from turning sour, the injurious effect of the metal upon the human body not being at that time recognised.

It has been found that in public-houses the beer first drawn in the morning is largely impregnated with lead derived from standing during the night in the pipes used to convey it from the barrels to the bar. The early tippler, therefore, has to encounter more dangers than is generally supposed.

Several curious cases of slow poisoning have occurred from the habitual use of snuff coloured with red lead. It occasionally happens that even when the snuff has not been intentionally adulterated, enough lead has been absorbed from the leaden packing to cause well-marked symptoms.

Children's farinaceous foods, which have been packed in lead, should be carefully avoided.

Wafers are sometimes coloured red with lead, a circumstance which has been ingeniously employed by a sensational novelist in the elaboration of a plot in which slow poisoning was the chief incident.

Many ladies will hear with surprise, not altogether unmixed with alarm, that lead is one of the commonest ingredients of hair dyes, and that it enters largely into the composition of some of the most popular cosmetics. Many cases of lead-poisoning have arisen from the too frequent and liberal application of preparations rejoicing in the name of "Bloom of Youth," or some equally attractive title.

Occasionally, sugar of lead, taken for medicinal purposes, has excited symptoms of poisoning; but such cases are rare, and afford no ground for abandoning the use of a most valuable remedy. A very small quantity of lead, if frequently repeated, is adequate to produce all or some of the symptoms of lead-poisoning—a quantity, for instance, not greater than from one-fortieth to one-fiftieth of a grain in the gallon.

There is no doubt that some people are much more readily affected by lead than others; in fact, the susceptibility to its action runs in families just as much as gout does. An instance is related of a lady who presented all the symptoms of lead poisoning, from sleeping for a single night in a room which had been recently painted. Another lady suffered from lead colic and paralysis, which are supposed to have been caused by the emanations arising from some lead works situated nearly three-quarters of a mile from the house in which she resided. Of course, such cases as the last are quite exceptional, and can be regarded only in the light of curiosities. The possibility of the use of the preparations of lead for criminal purposes should not be overlooked.

The symptoms caused by slow lead-poisoning are so characteristic that the nature of the complaint cannot, in well-marked cases, remain long unrecognised.

In the first place there is "colic" pain of a most distressing character in the walls of the abdomen, chiefly in the region of the navel. At one time it raged like an epidemic in a portion of our fleet, from the accidental impregnation of the rum with lead, and was then known as the "West Indian dry belly-ache." The pain is usually eased, but occasionally aggravated, by firm continuous pressure. Very frequently the colic is one of the first symptoms of lead-poisoning, but occasionally its appearance is delayed until long after the nature of the complaint has been determined by other signs. The colic is usually associated with, and possibly dependent on, a confined state of the bowels. The constipation caused by lead is most obstinate, even powerful purgatives producing very little effect. Frequently the patient suffers from cramp in the calves of the legs, and other parts of the body. He is harassed by pains in the joints, which are generally of a rheumatic character, and are increased by movement of any kind, but more especially by cold, damp, or wet weather.

In addition to these symptoms there are complete loss of appetite and intense thirst, the mouth is dry, and the breath usually offensive. The general nutrition of the body is impaired, the skin becomes pale and sallow, and soon the patient is but a shadow of his former self. Sometimes there is paralysis, which frequently assumes the form of "wrist drop." The muscles of the arm are wasted, the wrist can be no longer straightened, and the hand hangs down powerless and useless.

A very curious symptom, and one which is always associated with chronic lead-poisoning, is the occurrence of a blue or purplish line running along the edges of the gums, just where they meet the teeth.

It is seen on the gums only where they come in contact with the teeth, and where there are no teeth the line is absent. It is observed first, and is always most marked on the gums in the neighbourhood of the front or incisor teeth. It is one of the earliest indications of the effect of lead on the system, and is one of the last to disappear. It is never absent in slow poisoning by lead if there are any teeth, and its presence has served to elucidate the nature of many a previously obscure case of disease. When colic or "wrist drop" is present this blue line should always be looked for.

We must now consider the treatment to be adopted in cases of chronic lead-poisoning. Obviously the first thing to do is to detect the origin of the mischief, and to make sure that no more lead is introduced into the system. In the case of contaminated water, some other source of supply must be found, or the patient must confine his attention to other beverages. It is always desirable to start with a good purge, and two table-spoonfuls of Pr. 34 should be taken every four hours, until the bowels are well opened. The iodide of potassium mixture (Pr. 32) should then be taken in two table-spoonful doses three times a day. In cases of "wrist drop" galvanism will probably have to be resorted to under medical advice and superintendence.

When a person has once suffered from lead-poisoning he will in all probability, unless extremely careful, be attacked again. If a worker in lead, he should make an endeavour to find some occupation in which he is not brought in contact with the metal. Except in the case of young men, it must be acknowledged that it is no easy matter to change one's employment. If unfortunately obliged to return to his old work, he should pay the utmost attention to cleanliness—a point too frequently neglected by artisans who work in metals. The face and hands should, if possible, be always washed before meals, the mouth should also be rinsed out, and the hair combed. The working clothes should be washed once or twice a week, and should be used as little as possible out of the workshop. The meals must never be taken in a room in which the manipulation of lead is in any form in progress. Many workers in this metal find it advantageous to take three or four times a day, in a little water, fifteen drops of aromatic sulphuric acid. The acid combines with the lead to form an insoluble compound, which is not absorbed into the system. In many large lead works the men are given treacle-beer acidulated with sulphuric acid. It is made as follows:—

Treacle, 15 lb.; bruised ginger, ½ lb.; water, 12 gallons; yeast, 1 quart; bicarbonate of soda, 1½ oz.; oil of vitriol (sulphuric acid), 1½ oz. by weight. Boil the ginger in two gallons of water, add the treacle and the remainder of the water (hot), put the whole in a barrel, and add the yeast. When the fermentation is nearly over add the oil of vitriol, previously mixed with eight times its weight of water; lastly the soda, dissolved in a quart of water. It is fit for use in three or four days.

Goulard water is a dilute solution of subacetate of lead. It is a cooling, sedative, and astringent lotion, and is frequently used externally as an application to bruises, burns, scalds, and wounds of all kinds. In some forms of skin disease, when there is much inflammation, and when the surface is raw and weeps copiously, the lotion applied on linen not only checks the discharge, but allays the accompanying itching, burning, and tingling. The application should be renewed frequently. It is a poison when taken internally. A drummer in a French regiment, who was much addicted to drinking, stole a bottle of Goulard water and drank it for the sake of the spirit which it contained. How much he actually drank was not ascertained, but the quantity was sufficient to cause death on the evening of the third day.

Sugar of lead is, from its astringent properties, largely used internally for checking bleeding from all parts of the body, but more especially from the lungs and stomach. It is best administered according to Pr. 30, two table-spoonfuls being taken every four hours until the bleeding ceases. This mixture is useful in all forms of diarrhœa. It is frequently successful in arresting the purging of dysentery and typhoid fever. It is also used for arresting the morbid changes in the kidney in Bright's disease.

LOBELIA.—Indian tobacco (*Lobelia inflata*) is a native of North America, and was used by the aborigines long before its introduction into European practice. For many years it was employed almost exclusively by the so-called medical herbalists, who stoutly maintained that it was incapable, even in large doses, of producing any ill effects. Many deaths have occurred from its injudicious use, and although it is a valuable remedy for many diseases it is not a drug which can be given in unlimited quantities. The symptoms produced by lobelia poisoning are very similar to those resulting from tobacco. Some people are very susceptible to the action of the drug, and even a small medical dose may cause a good deal of depression, and perhaps vomiting. These effects, although disagreeable, are transitory, soon passing off. The preparation of lobelia most commonly employed is a tincture of the strength of two and a half ounces of the dried plant to a pint of spirit.

Lobelia has obtained its reputation chiefly in the treatment of asthma. On any indication of the onset of an attack, the use of the medicine should be at once commenced. Ten drops should be given every ten minutes in a little water for an hour, or until relief is obtained. By this method of using divided doses the risk of depression is almost completely obviated, for the patient can discontinue the use of the drug as soon as there is any nausea or sickness.

Sometimes lobelia proves very useful in whooping cough, in a few days reducing the frequency of the spasmodic attacks by one-half. For children of ten years of age, five drops of the tincture should be given every hour, with an additional dose before each paroxysm, if its advent can be predicted. For younger children three drops of the tincture may be given every hour. Curiously enough children are infinitely more tolerant of lobelia than are adults, it seldom causing in them either depression or nausea.

LOBELIA.

LETTUCE and HOPS.—The common lettuce possesses distinct narcotic properties. Its sedative powers have been long and familiarly known, and we are told in the fables of antiquity that after the death of Adonis, Venus threw herself on a bed of lettuces to lull her grief and soothe her anguish. It is related moreover of Galen, the celebrated physician of the first century, that he was in the habit of eating a lettuce at bed-time, for the relief of sleeplessness, a practice still resorted to with success by many who experience a difficulty in obtaining their fair share of rest.

The leaves of our common garden lettuce are universally esteemed as a cooling and agreeable salad, but when the plant is allowed to flower it develops a bitter milky juice, leaving an odour allied to that of opium. When the stem is cut off about a foot from the top this juice freely exudes, and by exposure to the air dries and forms a brown solid called *lactucarium* or *lettuce opium*. This substance is yielded in still greater abundance by the strong-scented lettuce (*Lactuca virosa*), a plant growing wild in the neighbourhood of hedges and old walls. It is readily distinguished from the cultivated variety by the shape of its leaves and the purple-red colour of the stem.

The lettuce is at present but little used in medicine, although by some it is regarded as one of the most valuable of our native plants, the dried juice constituting an excellent substitute for opium. Lactucarium, like many sleep-producing agents, is somewhat uncertain in its action, but it may, nevertheless, be used with advantage in cases in which the use of opium is inadmissible. The ordinary dose for an adult is from two to ten grains dissolved in spirit.

HOP LEAF AND BLOSSOM.

The hop is not much used in medicine, although it is reputed to possess sedative properties. In hot countries a hop pillow is often recommended for sleeplessness. It is occasionally used with advantage in cases of restlessness, when for any reason the use of opium is considered objectionable. The benefit said to have been obtained from it by George III. brought it for a time into more general notice.

In the form of bitter-beer the hop is an excellent remedy for dyspepsia and debility of the digestive organs.

LIME WATER and CHALK.—As both these substances contain lime, and are used in medicine for very similar purposes, they may be conveniently considered together.

Lime, or quicklime, is usually made from chalk by strongly heating it to drive off the carbonic acid. The best lime, however, is made from white Carrara marble. Slaked lime is prepared by adding water to quicklime. Place two pounds of lime in a metal pot, pour over it a pint of water, and when vapour is no longer given off set it aside to cool. When it is cool it may be taken out, sifted through an iron-wire sieve, and kept in a closely-stoppered bottle. Slaked lime should be freshly prepared; it loses much of its activity if allowed to lie about exposed to the air. Lime water is readily prepared:—Put two ounces of slaked lime into a stoppered bottle containing a gallon of water. Shake it for a few minutes, and then place it on one side to settle. In a few hours the undissolved lime will have fallen to the bottom, and the upper clear fluid may be decanted off and used as required. It is important to keep the bottle well stoppered.

Lime is much more readily soluble in sugar-and-water than in pure water, and advantage is taken of this fact to make a saccharated solution of lime, which is twelve times as strong as the ordinary lime water. It is made as follows:—Rub up together one ounce of slaked lime and two ounces of white sugar. Transfer the powder to a bottle containing a pint of water, and shake it occasionally for a few hours. Finally draw off the clear solution and keep it in a stoppered bottle.

We need, we presume, say nothing concerning the origin of chalk. Before being used in medicine it has, however, to undergo a little preparatory treatment, which is similar to that in making whiting. It is reduced to a very fine powder, being ground in a mill, and it is then stirred round and round in water, so as to separate the grosser impurities by allowing them to sink to the bottom. The pure chalk which is held in suspension is subsequently allowed to subside, and is made into little cakes and dried.

Chalk mixture is made by rubbing up together a quarter of an ounce of prepared chalk and gum acacia with seven and a half ounces of cinnamon water, and then adding half an ounce of syrup.

The aromatic powder of chalk contains a large number of ingredients. It is made by mixing thoroughly eleven ounces of prepared chalk, four ounces of cinnamon bark in powder, three ounces each of nutmeg and saffron, one and a half ounces of powdered cloves, one ounce of cardamom seeds, and twenty-five ounces of refined sugar. Believers in a combined effect should have great faith in this preparation.

Lime is a constituent of both the hard and soft tissues of the body. It forms more than two-thirds the weight of bones, which, on being deprived chemically of their salts, are converted into mere flexible gelatinous masses.

A knowledge of this fact leads to the administration of lime in cases of rickets, in which disease there is a deficiency of earthy matter in the bones.

Lime water is a useful remedy for vomiting, and also for diarrhœa. It often proves useful in vomiting resulting from ulceration of the stomach. It should be mixed with milk, either in equal parts or in the proportion of one of lime water to four of milk. When the vomiting is incessant it may be necessary to feed the patient on this alone, until the stomach has recovered itself sufficiently to bear solid food. Small quantities of the milk and lime water are often retained when everything else is at once rejected. It is as well to begin with a tea-spoonful, or at most a table-spoonful, administering it frequently, and very gradually and cautiously increasing the dose.

Babies very often throw up their milk; in fact, they generally do so. Sometimes the milk is curdled, and comes up in lumps; sometimes it passes in this curdled condition from the stomach into the intestines, and is a fruitful source of colic, wind, diarrhœa, and consequent wasting. Children often suffer greatly from this cause. Of course in these cases attention must be paid to the dieting, and more particularly to the quality of the milk; but if no error can be detected in this direction, lime water will generally overcome the difficulty. It prevents the lumpy coagulation, and cures the vomiting, diarrhœa, and their attendant evils. One-eighth part of lime water added to the milk usually suffices, but in case of failure, larger quantities of each, even equal parts, should be tried.

In all cases in which ordinary lime water is used, one-twelfth the quantity of the saccharated solution of lime may be substituted. Under many circumstances, in travelling, for example, it is a great advantage to be able to use a concentrated solution. In many cases of simple diarrhœa occurring in adults, a couple of table-spoonfuls or more of the chalk mixture will restrain the over-action of the bowels; whilst for children, from five to twenty grains, according to the age, of aromatic chalk powder will have the desired effect.

MAGNESIA and CARBONATE OF MAGNESIUM.—There are four different kinds of magnesia in common use, "heavy magnesia," "light calcined magnesia," "heavy carbonate of magnesium," and "light carbonate of magnesium," irrespective of several patent preparations.

Carbonate of magnesium is made by dissolving ten ounces of Epsom salts and twelve ounces of carbonate of soda, each in a pint of water. The two solutions are then mixed and the whole evaporated to dryness on a sand bath. The residue is digested for half an hour with two pints of water, the insoluble carbonate of magnesium is collected in a calico filter, and after repeated washing by allowing water to run over it, it is dried at a temperature not exceeding boiling point.

In the preparation of the light carbonate of magnesium, the same ingredients are used and in the same proportions, but the solutions employed are four times as weak.

Calcined magnesia is made by exposing the carbonate of magnesium to a red heat in a crucible until all the gas is driven off. Light calcined magnesia is obtained by a similar process from the light carbonate of magnesium.

The characters and properties of magnesia are so well known that it would be superfluous to enter into a detailed description of them. The two carbonates of magnesium effervesce on the addition of an acid, and are thus distinguished from calcined magnesia.

Magnesia and carbonate of magnesium are very similar in their action on the system, and are universally used as mild and agreeable aperients. They have an alkaline reaction, and might have been ranked with alkalies, but their effects are in other respects so widely different that they merit a separate consideration.

Magnesia is especially indicated in acidity of the stomach and heartburn with a tendency to constipation. It is of value in disorder of the bowels occurring in children, its mild action, freedom from taste, and anti-acid properties proving of great advantage. It is usually combined with a little rhubarb, and may be given in the form of Gregory's powder, of which the dose is for children from five to ten grains, and for an adult half a tea-spoonful. As an anti-acid, magnesia is preferable to the carbonate, as the latter, by giving off a quantity of gas, distends the stomach. The dose of either form of magnesia or the carbonate is, as an anti-acid, from ten to twenty grains, and as a purgative twenty to sixty grains. It must be remembered that the bulk of the light preparations is much greater than of the others. The medicine may be conveniently taken in water or milk and water.

Magnesia is an extremely insoluble salt, and when used as a purgative, either in excessive doses or too frequently, is apt to accumulate in the intestines and give rise to very unpleasant symptoms. A lady, subject to attacks of gravel, took every night for a period of two years and a half from one to two tea-spoonfuls of calcined magnesia. At the expiration of that time she began to suffer from pain and tenderness in the left groin, which was found to be associated with a deep-seated tumour, which could be indistinctly felt on pressure. This was followed by constipation, alternating with spasmodic action of the bowels, incessant straining, and a highly irritable state of the stomach. In one of these attacks she evacuated a number of soft brown lumps, which on examination were found to consist entirely of magnesia she had swallowed, bound together by the secretion of the intestine. The tumour was found to have disappeared, and the lady rapidly recovered. Another patient, however, was less fortunate, for a post-mortem examination made six months after she had abandoned the use of the drug disclosed in her abdomen the presence of a mass of magnesia weighing nearly five pounds.

The solution of citrate of magnesium (*limonade purgative*) forms a mild aperient draught suitable for children and delicate persons, especially where there is irritability of the stomach. The following is its mode of preparation:—Dissolve 200 grains of citric acid in a pint of water, and having added 100 grains of carbonate of magnesia, stir until it is dissolved. Filter the solution into a soda-water bottle, add a tablespoonful of syrup of lemons, then introduce forty grains of bicarbonate of potash in crystals, and immediately close the bottle with a cork, which should be secured with wire or string. The dose is half a tumblerful or more.

MARSH MALLOW — HOREHOUND — ELECAMPAGNE — COLTSFOOT — LIQUORICE. — There are several medicines which, though seldom prescribed by doctors, are yet not infrequently employed in the treatment of coughs and colds. Some of the commonest of these we have enumerated above.

MARSH MALLOW.

The Marsh Mallow (*Althæa officinalis*) is common in many parts of England, growing chiefly in marshes near the sea. In general appearance it closely resembles the common mallow or "bread and cheese." The flowers are of a pale rose colour, and appear in short clusters from the bosom of the leaves. The root is the part usually employed for medicinal purposes. It is long, round, branched, and of about the thickness of the finger. It is naturally of a dirty white colour externally, but is sometimes peeled, so as to expose the pure white interior. It has no odour, but a bland mucilaginous taste. It is greatly esteemed by the French, who use it in the form of the *pâté de guimauve*. In this country it is commonly taken as a syrup, which is prepared as follows:—Macerate one and a half ounces of marsh mallow root, dried and sliced, in one pint of cold water for twelve hours. Press out the liquor, and strain through linen. Then add three pounds of sugar, or twice the strained liquor, and dissolve with a gentle heat. Lastly, when cold, add half a fluid drachm of rectified spirit to each ounce. The dose is from a tea-spoonful to a table-spoonful.

The Common Mallow possesses properties similar to those of the marsh mallow. An infusion of the root sweetened with sugar forms a useful drink when the throat is dry and sore.

The Horehound (*Marrubium vulgare*) is not a common plant in England or Ireland, and is still more rare in Scotland, although in a few particular localities it is found in great abundance. It enjoyed a great reputation with our ancestors for the cure of coughs and colds of all kinds. Their favourite preparation was "horehound tea," which was made by covering an ounce of the plant with a pint of boiling water. It was taken in wine-glassful doses. The syrup of horehound is prepared by adding sugar to the infusion, and the candied horehound of the shops is supposed to be made by evaporating this down until it becomes solid.

HOREHOUND.

Coltsfoot (*Tussilago farfara*) is one of the commonest of our native plants, being found in profusion in most parts of the kingdom. From the earliest times it has had a reputation for the cure of coughs. Its name is said to be derived from the resemblance borne by the heart-shaped, small toothed leaves, to a colt's hoof. A decoction is commonly made by throwing a handful of the leaves into two pints of water, and boiling them down to one pint. The dose is a tea-cupful. The ancients preferred smoking it, and even in some parts of England this method is still adopted; for the so-called "British herb tobacco" consists chiefly of coltsfoot. A nostrum which for many years was sold as "essence of coltsfoot" contained not a particle of the substance from which its name was derived.

Elecampagne (*Inula helenium*) is a large herbaceous plant having coarse yellow composite flowers. In properties it is allied to senega. The root is used in the form of decoction, prepared by boiling half an ounce in a pint of water. The dose is from two to four table-spoonfuls. The article which for the last five-and-forty years has been sold in the shops in London as elecampagne is not a fluid but a solid, composed principally of sugar, coloured with cochineal. This having been melted by heat is poured into shallow tin dishes, and allowed to cool so as to form a hard brittle cake of about an eighth of an inch in thickness.

Liquorice is an extract prepared from the root of the common liquorice. The black cylindrical or flattened rolls, in which we usually buy it, are well known. The greater part is imported from Spain, and is well known as "Spanish liquorice." When allowed to dissolve slowly in the mouth it may serve to ease a tickling cough.

MERCURY, or QUICKSILVER.—No mention is made of mercury in the Old Testament, but we are told on the authority of an Oriental writer that the Egyptian magicians, in their attempts to perform the miracles of Moses, employed wands and cords containing mercury, which when warmed by the sun imitated the movements of serpents. It is said, too, that the priests of Memphis were acquainted with its physical properties, and employed it as a means of conveying motion to the images of the gods in their temples.

The metal has, in its time, received many names. "Hydrargyrum," "argentum vivum," and "quicksilver," are terms by which it has at different periods of its history been known, whilst the name mercury was applied to it on account of its volatility, and in reference to him who was at once the messenger of the gods and the patron of thieves, pickpockets, and all dishonest persons. In alchemy it was known by the symbol ☿, a sign which is still occasionally seen on the large red and blue show bottles in the chemists' windows.

Mercury itself is occasionally found in the metallic state in the form of globules, but occurs more frequently as sulphide of mercury or native cinnabar. It is found in China, but the principal mines are those of Idria in Carolina, and Almaden in Spain. Large quantities have of late years been obtained from California.

Quicksilver, unlike other metals, is a liquid at ordinary temperature, and is remarkable for its weight and beautiful silver colour and lustre. At very low temperatures it freezes, and may be obtained in the solid form, whilst, when very strongly heated, it is converted into a colourless gas. It readily combines with metals to form what is known as an amalgam, a property of which advantage is taken in the extraction of the precious metals. Its purity is shown by its brilliancy and great mobility, the slightest speck of adhering dirt or dust being readily detected. It is usually purified from mechanical admixtures by squeezing it through a pocket-handkerchief or piece of wash-leather, or by filtering it through a pin-hole in a sheet of paper. Quicksilver when contaminated by metallic impurities rapidly tarnishes on exposure to the air, and the presence of lead, tin, or zinc may be suspected if a little globule rolled along a smooth dry sheet of paper, instead of preserving its spherical form, becomes partly adherent, and leaves behind it a "tail" or smudge.

The injurious effects resulting from prolonged exposure to the vapour of mercury are well known. They are observed in water-gilders (who plate with gold dissolved in mercury), looking-glass silverers, barometer makers, workmen employed in quicksilver mines, and others exposed to the emanations of mercury. In most cases it induces a remarkable affection of the nervous system, manifested by the production of "shaking palsy" or the "trembles." The first symptom is usually unsteadiness of the arm, succeeded by quivering of the muscles, and this at last becomes almost convulsive in its character. The tremulous hand can be no longer directed with precision, and after a time can scarcely convey food to the mouth. An old writer, describing the case of one of his patients, says, "he could not, with both his hands, carry a glass half full of wine to his mouth without spilling it, though he loved it too well to throw it away." Soon the legs are affected and begin to shake, especially at the knees, so that in walking they tremble and dance about almost as if they were hung on wires. The speech is hurried, staccato, and stammering, and in extreme cases there is disturbance of the intellect. In addition to the excessive debility there is complete loss of appetite, with obstinate constipation. When the disease attains its greatest intensity the unfortunate sufferer presents a most pitiable aspect. In constant tremulous commotion, tottering, trembling, shaking, and stuttering, he is almost helpless. He can hardly walk or talk, he dare not touch any object for fear of breaking it or letting it fall, and on raising his agitated hand with food to his mouth he misses his aim and inflicts involuntary blows on his face. He must be fed and clothed like a child. Some unfortunates deprived of assistance have been known to crawl on all fours, and seize their food with the lips, like the lower animals.

Many years ago an English man-of-war received on board several tons of quicksilver saved from the wreck of a vessel near Cadiz. In consequence of the rotting of the bags, the mercury escaped, and the whole of the crew became more or less affected. In the space of three weeks 200 men were struck down by it, two died, and all the animals —cats, dogs, sheep, fowls, a canary bird, nay, even the very rats, mice, and cockroaches—were destroyed. Early in this century there occurred another instance of poisoning by mercury vapour on a still larger scale. A fire broke out in the quicksilver mines at Idria, near Trieste, and above nine hundred persons in the neighbourhood were attacked with the "trembles." Of late years the disease has in this country greatly diminished in frequency—water gilding, the most dangerous trade in which mercury is employed, having been in a great measure superseded by electro-plating, which is comparatively innocuous. Looking-glass silvering may be conducted in large, well-ventilated apartments, furnished with special means for preventing the diffusion of the metallic particles, with comparative safety, provided always that the workmen are employed only at intervals, and are temperate and careful. But when these conditions are disregarded—especially if the men are kept continuously at the work — the symptoms already described make their appearance in all their horrible intensity.

For the cure of this complaint the complete removal of the sufferer from his noxious employment is absolutely necessary. He should resort to frequent ablutions, and should, if possible, obtain a change of air. Sulphur taken both internally and in the form of sulphur baths, should be used to free the system from the mercury, and electricity and galvanism should be judiciously employed under medical supervision.

Mercury is seldom given internally in the metallic state. It has been proposed as a solvent for silver coins, accidentally swallowed; but this mode of treatment, we should imagine, would receive neither the approbation of the medical attendant, nor the consent of the patient. Formerly pounds and pounds of quicksilver were given in obstruction of the bowels, it being supposed that by its mechanical action it would succeed in breaking through the impediment. It almost uniformly proved useless, and there are now fortunately at our disposal other means which have entirely superseded this crude and unscientific mode of treatment. In the reign of Charles II. quicksilver was much used by ladies, in doses of a small tea-spoonful night and morning, to remove freckles and beautify the complexion. Water which had been boiled with mercury was at one time given for the expulsion of worms. It was not successful, probably for two reasons—in the first place, mercury is perfectly insoluble in water; and secondly, it exerts no influence at all on worms. This last statement is proved by the fact that people who are salivated with mercury are not cured of their worms; and, moreover, these parasites have been often found in the bodies of those who have spent their whole lives working in the quicksilver mines.

It will be seen that mercury taken into the stomach in the metallic state produces no noxious effects, although a small dose of one of its salts might readily affect the system. Sometimes, however, the metal when long retained in the bowels undergoes some chemical change, and then suddenly produces its full effects on the system.

The different preparations of mercury are usually employed either as purgatives or with the view of bringing the system under the action of the drug. To obtain the purgative action one large dose is, as a rule, administered, whilst to ensure the constitutional effects small doses are given frequently. The prolonged use of mercury is attended with the production of a condition known as "mercurialism." This is characterised by a metallic brassy taste in the mouth, slight redness and swelling of the gums, and tenderness of the teeth, a fetid breath, and an increased flow of saliva. If the use of the drug is still continued a condition known as "salivation" or "ptyalism" rapidly succeeds. The mouth becomes violently affected, the gums are inflamed and ulcerated, the teeth are loosened, the tongue is swollen to such an extent that it hangs out of the mouth, incapacitating the patient from either eating or speaking; the salivary glands are enlarged, very painful, and inflamed, whilst the saliva is secreted so freely that it flows most copiously from the mouth. In cases of profuse salivation the amount of saliva secreted is very great, the fluid pouring from the mouth almost continuously. In one case as much as sixteen pints are said to have been collected in twenty-four hours. In addition to these by no means trifling symptoms, the patient often suffers from severe neuralgic pains in the jaws, a general feverish condition, and a profuse diarrhœa.

It must be clearly understood that these symptoms are caused only by the abuse of mercury, and that all the beneficial effects of the drug may be obtained without the production of salivation. Salivation is a distinct evil, and its occurrence can always be guarded against by immediately discontinuing the medicine on the occurrence of the slightest tenderness of the gums. In years gone by it was thought that no beneficial action could be derived from mercury unless the patient were thoroughly salivated, and the quantity of saliva to be excreted before the use of the drug was discontinued was often fixed by the physician.

There are many circumstances which influence the production of salivation. Some people are extremely susceptible to the action of mercury, a dose which on the majority of people would have no effect producing in them profuse salivation. There are people who are at once salivated by a three-grain calomel pill, just as there are people who can never eat a mutton chop without suffering from symptoms which rival in intensity those of Asiatic cholera. Truly what is one man's meat is another man's poison. As might be supposed, weak feeble individuals are more easily affected than the strong and hearty. Children, however, usually resist in a very remarkable manner the action of mercurials, and are rarely salivated. Illness, too, influences the operation of mercury, for in inflammation it is well borne, whilst Bright's disease and affections of the kidney generally render the system very sensitive to the action of the drug, which in these cases should be given, if at all, with the utmost caution.

Salivation is usually caused by the prolonged and injudicious use of mercury, but not always, for there are several other drugs which exert a similar influence on the salivary secretion. Foremost among them is a South American plant known as jaborandi, whilst preparations of arsenic, of antimony, and of copper occasionally exhibit this property. There is, too, a condition known as "spontaneous," or "idiopathic" salivation, salivation, that is, occurring without any obvious cause. A French physician relates the case of a patient who had been under observation for nine years, and had during the whole of that time spat from eight to nine pints of saliva daily.

As we have described with some minuteness the symptoms of salivation, and pointed out the evil effects resulting from the abuse of mercury, it is only fair that we should speak of the means at our disposal for the alleviation or cure of this condition should it unfortunately occur.

In the first place a man who is salivated is in no fit condition to go out. During the whole time that his mouth is sore he must confine himself to the house, take light but nourishing food, regulate the state of the stomach and bowels, and above all avoid taking cold. Occasionally he should suck a chlorate of potash lozenge, and gargle his mouth and throat with the alum gargle (Pr. 81). Iodide of potassium possesses the power of eliminating mercury from the system, and the mixture

(Pr. 32) should be taken three times a day. When the secretion of saliva is very copious, tincture of belladonna often proves useful. The patient's strength must be supported, and a change of air is usually advisable.

We must now consider in detail the different preparations of mercury, and the combinations which it forms with other elements. No one desirous of bringing the system under the influence of mercury would think of taking a spoonful of quicksilver, any more than he would undergo a course of iron by swallowing nails, or taking a bite out of the poker. The metal must be given in some form in which it can be assimilated and absorbed into the system.

Grey Powder.—In this the mercury is intimately mixed with chalk, and exists in a state of fine subdivision. It is made by rubbing up in a mortar one ounce, by weight, of mercury, with two ounces of prepared chalk, until the metallic globules can be no longer seen, and the mixture has acquired a uniform grey colour. When the drug is made on a large scale labour is economised by placing the ingredients in a cask which is rapidly rotated on an axis. It is probable that the chalk and mercury are not chemically combined, but are merely in a state of intimate mechanical admixture. Grey powder is insoluble in water, but any acid, such as a little vinegar, will soon dissolve up the chalk with effervescence, leaving behind a residue which, on examination with a lens, is found to be composed of minute globules of quicksilver. The ordinary purgative dose of grey powder is, for adults, from three to eight grains, but for children much smaller doses are often given. Grey powder is commonly prescribed in the form of tabloids, which are kept of three strengths—a third, a half, and one grain. Prs. 71 and 72 are useful combinations for children. It will be noticed that the dose contained in the first powder is very much smaller than in the second. As already explained, we give a large dose when we require the purgative action, but we obtain the constitutional effect by the frequent administration of small doses. The powder containing rhubarb is a purgative—the other is not.

Blue Pill or *Mercurial Pill,* like the last preparation, contains mercury in a state of minute subdivision. This is, undoubtedly, the oldest, as well as the most popular form of mercurial pill, and is said to have been first introduced by Francis the First, King of France.

It is made by rubbing together mercury, confection of roses, and powdered liquorice root. Steam power is now employed for this purpose, a considerable advantage, as the efficacy of the pill depends on the extent to which the mercury is subdivided. A blue pill may be given either for its purgative properties, or for its effects on the general system. The practice of taking a blue pill at night, followed by a black draught in the morning, is a very popular form of obtaining a purge. It must never be forgotten that "blue pill" is a mercurial preparation, and that its constant use may possibly cause salivation, and the other symptoms which arise from the over-action of mercury.

The constitutional symptoms of mercury may be induced by taking blue pill with opium (Pr. 62); the opium neutralises the purgative properties of the mercury.

Mercurial Ointment, or blue ointment, as it is often called, has been in use for over 1,000 years. It is made by rubbing up mercury with lard and suet, until the globules are no longer visible even under a lens. The preparation is effected by machinery, in consequence of the difficulty experienced in sufficiently subdividing, or, as it is technically termed, "killing" the mercury. Unfortunately this preparation is often, to say the least of it, carelessly made. A portion of the mercury is omitted, and the requisite depth of colour is obtained by the addition of Prussian blue. The ointment is of course for external application only. It is used not only locally to tumours of various kinds, but also as a means of affecting the constitution. When the latter object is desired a piece of ointment about the size of a walnut should be rubbed into the skin night and morning. It matters little to what part of the surface the ointment is applied, supposing the skin to be moderately thin; but the regions most generally selected are the arm-pits and the inside of the thigh. It is better for the patient to rub in the mercury himself, as by that means none of the ointment is lost, but should another person be the operator he should protect his hand with a leather glove. Moderate warmth and the occasional use of the hot bath render the skin supple, and promote the absorption of the drug.

Oleate of mercury, a comparatively recent preparation, threatens to prove a formidable rival to our old friend the "blue ointment." Oleic acid is one of the constituents of common fat, and the oleate of mercury consists of the recently precipitated oxide of the metal dissolved in this acid. The solutions of oleate of mercury are made of three different strengths. The 5 per cent. solution is a perfectly clear, pale yellow liquid, resembling olive oil, but thinner; the 10 per cent. solution is also fluid and perfectly clear, but as dark as linseed oil; whilst the 20 per cent. preparation is an opaque yellowish unctuous substance, which readily melts with the heat of the body and forms a kind of transparent colourless varnish when applied to the skin. These preparations are cleanly and economical, and have a much greater diffusibility or penetrating power than the old mercury ointment, for they are absorbed by the skin with great promptitude, and rapidly manifest their remedial powers. They are used in all cases in which the blue ointment proves beneficial. They are not rubbed in like ordinary liniments, but should be painted on the part with a brush, or lightly spread over with the finger. They are extremely useful for inducing the action of mercury on the system. A piece of the 20 per cent. ointment about the size of a large bean placed in the patient's arm-pit night and morning, for five or six consecutive days, rapidly and easily, and without any sign of uncleanliness, produces in a mild form the constitutional effects of mercury.

Mercury Plaster contains one-third of its weight of mercury, and is employed chiefly as a stimulant in old standing swollen joints and other similar cases.

Calomel is a subchloride of mercury, and differs chemically from corrosive sublimate only in containing an atom less of chlorine. It was used at a very early period by the Hindoos, and was largely prescribed by them internally. It occurs native in Spain, and is there known as native calomel, or horn mercury.

It is usually prepared artificially from sulphate of mercury and common salt. A little corrosive sublimate is always formed in the process, and is removed by frequent washing with water. The importance of freeing the drug from this impurity is very great, as the corrosive sublimate is an active poison when administered in doses in which calomel is usually given.

Calomel is a dull white, heavy powder, almost tasteless, and perfectly insoluble in water, which last property is, as we have seen, turned to account in its purification.

Calomel may be ranked among the milder preparations of mercury, and is most frequently employed for its purgative properties. It often produces in children the so-called "calomel stools," or green motions. It is frequently given in combination with other purgatives, particularly as the compound calomel or "Plummer's pill," which contains, in addition to the calomel, antimony, guaiac resin, and castor oil. When a simple purgative calomel pill is required, Pr. 61 may be used, the henbane preventing griping or any unpleasant consequences. When it is desired to employ calomel for purposes apart from its purgative action, the calomel and sugar powders (Pr. 73) may be employed.

Calomel is undoubtedly poisonous in large doses, but considerable quantities have nevertheless been taken on several occasions without unpleasant symptoms. In one case an ounce of calomel was swallowed by mistake, and was retained on the stomach for two hours before the error was discovered. The only effects noticed were slight nausea and faintness. Subsequently an emetic was administered, the calomel was vomited up, and the patient was quite well on the day but one following. In this case the drug appears, by some fortunate combination of circumstances, to have remained in the stomach unabsorbed.

When mixed with lime water, calomel forms the well known "black wash," which is frequently used as a local application to sores of a specific nature.

Black Wash.—Calomel, thirty grains; lime water, half a pint. Mix to form a lotion. The bottle must be well shaken before each application. Label it "POISON."

Corrosive Sublimate is known chemically as perchloride of mercury. As usually sold it is a heavy, semi-transparent, crystalline mass, freely soluble in water, and having a strong metallic taste. It is a powerful irritant poison, although in extremely small doses it is a most valuable medicine. From three to five grains will kill an adult. The symptoms produced by large doses come on almost immediately, sometimes even in the very act of drinking the poison. A strong metallic taste is perceived in the mouth, and is followed by a feeling of constriction and burning heat, extending from the throat to the stomach. In a few minutes excruciating pain is felt over the abdomen, accompanied by profuse purging, and incessant vomiting of matters tinged with blood. The pulse gradually fails, and in a few hours death is ushered in by fainting, convulsions, or general insensibility. The symptoms of poisoning by corrosive sublimate at first closely resemble those of Asiatic cholera, but should life be prolonged for some days the resemblance to dysentery is more striking. It is now used as an antiseptic in surgical operations.

We shall have frequently to refer to the administration of this salt when speaking of the medicinal uses of mercury. The ordinary dose is from $\frac{1}{100}$ to $\frac{1}{4}$ of a grain. The corrosive sublimate mixture (Pr. 48) may be employed. The dose for a child is a tea-spoonful given frequently.

The best antidote in cases of poisoning by corrosive sublimate is white of egg, the contents of one egg being sufficient to neutralise about four grains of the poison. A few years ago, a celebrated chemist, whilst lecturing, inadvertently swallowed, instead of water, a mouthful of concentrated solution of corrosive sublimate. Immediately perceiving the error, he sent for some eggs, which were fortunately procured in a few minutes. The whites were at once taken, and the sufferer, although the poison was retained, ultimately recovered without any material harm. Had it not been for the prompt use of the albumen, he would, almost certainly, have perished.

White Precipitate or *Ammoniated Mercury* is made by adding ammonia to corrosive sublimate. It is an opaque white powder, quite insoluble in water. It is not used internally in medicine, but is, unfortunately, too frequently employed by those who, weary of life, forget the canon fixed against self-slaughter. The dilute white precipitate ointment (Pr. 89) is frequently used as an application in skin diseases, and more particularly for the destruction of lice and other parasites.

Red Iodide of Mercury is a crystalline powder of a beautiful bright vermilion colour. It is not soluble in water, but dissolves freely in the iodide of potassium mixture (Pr. 32). Respecting its action on the system we have little to say, as it so closely resembles in this respect corrosive sublimate.

The applications of the different preparations of mercury to the treatment of disease are very numerous—in fact, mercury is one of the most valuable drugs at our disposal.

Calomel ointment proves efficacious in the treatment of many forms of itching. The annoying itching which accompanies many skin diseases may often be allayed by this preparation. In the itching from nettle-rash, however, it is usually useless. The ointment is of great service in allaying itching in the region of the back passage. This affection is often troublesome to cure, and its existence not only most effectually prevents the sufferer from going into society, but really renders life miserable. A remedy such as this is a boon.

The different preparations of mercury are of great service in the treatment of disorders of the stomach occurring in children. In these cases considerable care is required in the selection of the appropriate remedy, and we shall therefore describe the indications for each preparation somewhat fully.

Sometimes a particular form of vomiting is met with in very young children, generally in those only a few weeks old, the characteristic feature of which is its suddenness. Immediately the milk is swallowed it is forcibly shot out from both nose and mouth, either curdled or uncurdled, and apparently without any retching or effort on the part of the child. Diarrhœa may co-exist, but there is usually constipation. This affection often proves both obstinate and dangerous, for all the food being rejected the child is reduced almost to a skeleton, and dies actually of starvation. This condition, after resisting all other remedies, can frequently be cured by giving one of the powders (Pr. 71) every two hours.

In the diarrhœa of children mercury is extremely useful. Cases of the following kind are often met with; every mother knows them. The baby is poorly, his digestion is bad, and he suffers all day long with the wind, and very often passes three or four nasty, pale, pasty, stinking motions, which look just like a piece of clay. One of the "sugar and grey" powders given every hour for a day or two will restore the motions to their natural colour, and cut short this condition, even should it have existed for weeks.

Then, again, there is another kind of diarrhœa to which children are subject. The stools are slimy, mixed with blood, and often passed with a good deal of pain and straining. Sometimes the slime is very tenacious, and being covered with blood looks like a piece of flesh. It is best treated by tea-spoonful doses of the corrosive sublimate mixture (Pr. 48) given hourly or oftener. This method will cure the complaint even after several months' duration.

Infants not infrequently suffer from chronic diarrhœa, in which the stools—ten or a dozen of which may be passed in the day—are watery, muddy-looking, or green-coloured, and extremely offensive. This condition may be restrained by the powders (Pr. 71) given at first every hour, and then every two or three hours, according to the frequency of the stools. The occurrence of vomiting is an additional indication for this mode of treatment. Although the diarrhœa can be arrested, yet the disease may have persisted for so long a time that a serious injury may have been inflicted on the stomach, so that food can be neither digested nor absorbed, and the child, in spite of every effort, gradually wastes away.

Infantile Cholera is an extremely fatal disease, running so rapid a course that the child soon assumes a death-like aspect, and is in a very critical condition. It is characterised by incessant sickness, and by almost continuous diarrhœa, the motions being copious and offensive, and either watery and almost colourless, or of a dirty muddy aspect.

It is essential to check this condition as speedily as possible, and this can be usually accomplished by giving one of the powders (Pr. 71) every half hour, until relief is obtained.

In that form of diarrhœa in which the child passes large offensive stools, evidently composed of decomposed milk, mercury proves of little use.

Chronic diarrhœa occurring in adults will, if the stools are pale and watery, yield to tea-spoonful doses of the corrosive sublimate mixture taken every two or three hours.

Similar treatment proves beneficial in dysentery, when the stools are slimy and contain blood. The corrosive sublimate mixture taken as directed, in tea-spoonful doses, will usually remove the blood and slime, although the use of some other diarrhœa medicine may have to be resorted to before the disease is entirely cured.

Occasionally children are met with some three months old, or it may be younger, who have become emaciated, pale, fretful, and shrivelled in the face till they look like little old men. They suffer from "snuffles," or obstruction of the nose, so that they are obliged to keep the mouth open, and sucking is with them almost an impossibility. They have generally an eruption on the skin, particularly about the soles of the feet and on the buttocks. There is often inflammation at the corners of the mouth, and very frequently the eyes are also affected. They will rapidly improve if a grain of grey powder be given three times a day with a little sugar. It never in this dose purges, but, on the contrary, if diarrhœa be present, it frequently checks it. A little piece of the calomel ointment passed into each nostril will usually cure the "snuffles," and remove the difficulty in breathing. In these cases, however, it is, as a rule, advisable to obtain the advice of a medical man.

People who suffer from biliousness often obtain relief by taking calomel. When the bowels are at the same time confined, it is a good plan to take one of the calomel pills at bed-time; but when there is no attendant constipation, it is better to take one of the calomel powders, or one of the "sugar and grey" powders three or four times a day. These powders are especially adapted for those who frequently suffer from this condition, and in whom the constant employment of the pills would produce depression and possibly salivation.

The white-furred tongue, often seen in people who suffer from indigestion, may be readily cleaned by one of the sugar and grey powders taken three or four times a day. The nasty taste in the mouth, which is so frequently an accompaniment of this condition, may be removed by the same means.

The powders (Pr. 71) taken hourly are extremely useful both in scarlatina and quinsy, when the tonsils are so large as almost to meet, and when the patient is unable to swallow, and is in great distress from the difficulty in breathing. The swelling is reduced in a few hours, and all danger is over.

These powders act with almost equal promptness in mumps, speedily relieving the swelling and pain of this affection.

Mercury is our great remedy for syphilis; by far the best remedy we have. If you are suffering from this disease, the best thing you can do is to go to a doctor at once.

MINDERERUS'S SPIRIT.—This was introduced into medicine in the year 1732, and was named after Minderer or Mindererus, who was one of the first to use it. It is a solution of acetate of ammonia, and is made by adding acetic acid to carbonate of ammonia. It is a colourless fluid without odour, but with a strong saltish taste. It is a useful and at the same time a very safe preparation. It is often given in fevers and in febrile attacks, to keep the skin moist and cool, and to promote a flow of urine. It is useful in chills and febrile colds, but in many cases tincture of aconite (Pr. 38) is to be preferred. The dose of the solution of acetate of ammonia is from one to two table-spoonfuls in water every four hours. This is for an adult; in the case of a child a proportionately smaller dose would be given according to age. Sometimes it is applied externally as a wash for bruises and inflamed parts. It enters into the composition of the ordinary saline draught, of which the following is an example:—

Solution of acetate of ammonia	3 drachms
Sweet spirits of nitre	20 drops
Water	to an ounce.

This may be taken every three or four hours. It is cooling but not purgative.

This is another good saline mixture, containing acetate of potash instead of acetate of ammonia:—

Acetate of potash	15 grains
Spirit of juniper	10 drops
Decoction of broom	to 1 ounce.

To be taken every four hours. It will be found to promote powerfully the action of the kidneys.

MORPHINE, or MORPHIA.—(*See* OPIUM.)

MUSTARD.—There are two different species of mustard used for medicinal purposes, one having white and the other black seeds. Both varieties grow wild in the fields, and have been cultivated in most parts of Europe from time immemorial. Both kinds have yellow flowers, those of the white mustard being larger than those of the black. When crushed and sifted both seeds yield the flour of mustard, the best being obtained from a mixture of the two seeds. Mustard is commonly adulterated with flour, turmeric and capsicum powder being added to imitate the natural colour and pungency. When dry it has but little smell, but when moistened it evolves a pungent, penetrating odour, which proves very irritating to the eyes and nostrils. It is extensively used as a condiment, and probably assists the assimilation of many foods which are digested with difficulty. In larger quantities it acts as an emetic, and from being always at hand is frequently used for evacuating the stomach in cases of poisoning. From a tea-spoonful to a table-spoonful of mustard flour should be added to a tumbler of tepid water, and taken without delay. Cases of obstinate, and even dangerous, hiccup have been promptly cured by drinking an infusion of mustard, made by steeping a tea-spoonful of mustard flour in a teacupful of boiling water for twenty minutes, and then straining.

MUSTARD PLANT.

In the form of a poultice, mustard applied to the skin acts as a valuable counter-irritant. A mustard poultice is made by mixing equal quantities of linseed meal and mustard flour with a little hot water, and stirring them well together. The linseed and mustard should be thoroughly mixed before being added to the water. Some people add vinegar, but this is a mistake, as it retards the production of the essential oil, on which the irritating properties depend. Care should be taken that the water employed in making the poultice is not too hot.

A mustard poultice can seldom be borne longer than twenty minutes, and people with delicate skins are often unable to endure it even for this time. It should never be allowed to produce a blister, as they are usually very troublesome to heal. Not infrequently, strong mustard poultices are applied to the calves of the legs in cases of concussion of the brain, apoplexy, etc. It must be remembered that the patient being insensible is incapable of expressing pain, and that unless we are careful to remove it in time, the mustard may form a large blister, which in a person debilitated by disease may be followed by the most serious consequences.

Mustard may be used externally in all cases in which cantharides proves useful, and the formation of a blister is not necessary. Thus it is useful in bronchitis, pleurisy, and inflammation of the lungs. In these cases the whole chest or back should be covered with the poultice, as the larger the tract of skin irritated, the greater is the influence exerted on the organs beneath. The mustard paper or mustard leaves now so much in vogue may be used as an elegant substitute for the mustard poultice.

Added to a hot foot-bath, mustard is often used to cut short a cold, to relieve headache, and to arrest the progress of inflammation in any of the internal organs.

In women in whom the periods have been suddenly arrested, a mustard hip-bath used for a few days before the next expected time will often suffice to restore the function.

NITRE or SALTPETRE and CHLORATE OF POTASSIUM.—These salts are familiar enough to those of us who in our youthful days devoted our energies to the study of the now somewhat abstruse science of pyrotechnicology. Both are used largely in the manufacture of fireworks.

It is to be presumed that nitre, being a natural production, was known to the Chinese and Indians, more particularly as both these intelligent races at an early period of their respective careers exhibited a remarkable aptitude for manufacturing explosive agents. Nitre is found as an exudation or efflorescence on the soil in many parts of India. It is washed out, and sent to this country in a rough state, and is here purified for use. In Europe it is prepared artificially, in what are known as nitre-beds or plantations. Refuse animal and vegetable matters are mixed with ashes and lime rubbish to form heaps, which are protected from the wet, but are exposed freely to the air. They are watered occasionally with liquid nitrogenised matter, and at intervals of about three years are washed out to obtain the nitre.

The whole process, viewed chemically, is extremely interesting, but as the salt is given internally we must be pardoned for not entering more fully into detail.

Nitre crystallises in beautiful colourless striated six-sided prisms, which are readily formed by dissolving a quantity of saltpetre in boiling water and then leaving the solution to cool. These crystals have a pleasant saline taste, and when thrown in the fire, or placed on a piece of red-hot charcoal, deflagrate with an energy which acts as a reminder that they form 75 per cent. of gunpowder.

Let us now pass on to a consideration of its therapeutical applications. Of what use is it to us in the treatment of suffering humanity? It has been loudly lauded, like many another drug, in the treatment of rheumatic fever. It has been claimed for it that it not only shortens and mitigates an attack of acute rheumatism, but protects the heart from the baneful effects of the disease. We are sorry we cannot endorse these statements, but must confess that there are drugs of which we shall speak presently on which we should place greater reliance in the treatment of this disease (*see* SALICINE).

In case of inability to hold water occurring in children, nitre often proves successful, provided always that that condition is not dependent on worms or some similar exciting cause.

In sore throat, saltpetre is often taken in the form of nitre balls. These are simply made by fusing the nitre and then casting it in bullet-moulds.

In cases of rheumatism and lumbago accompanied by scanty high-coloured water, saltpetre should be used. In a few hours under its influence the water becomes clear and bright, and the pains then gradually subside.

If used in rheumatic fever, nitre must be employed in large doses, as much as from half an ounce to an ounce being given in the course of the day in lemonade or barley water, sweetened to taste. In other diseases, such as rheumatism, from five to ten grains may be taken in water every hour until relief is obtained. For children the dose is from one to three grains.

Chlorate of potassium is made on a large scale for the preparation of lucifer-matches and detonating powders by a process which practically is equivalent to passing chlorine gas through potash. When powdered up in a mortar with sulphur it detonates violently, a fact to be remembered in dispensing.

This drug finds its chief application in the treatment of diseases of the mouth. It proves of signal service in ulceration of the edges of the gums and the sides of the mouth and tongue. This condition, though seldom dangerous, is, to say the least of it, extremely unpleasant, and in children often proves very difficult to cure. Implicit trust may be placed in chlorate of potash in the treatment of this condition. In another troublesome complaint it often proves useful, for if taken early and frequently it will often cut short a cold. It usually quickly relieves the hoarseness, and stiffness in the nose, and above all the raw feeling in the throat.

The dose is from ten to twenty grains or more, and it may be conveniently taken in the form of chlorate of potash tabloids, each of which contains five grains.

We have already seen the action of nitre and chlorate of potassium on the system when used separately; let us now consider an extremely useful application when used in combination. As everyone knows, blotting-paper, dipped in a solution of nitre, and dried, forms "touch-paper," which, when ignited and allowed to smoulder away, sometimes serves to cut short an attack of asthma. Too frequently, however, these papers prove useless, and the unfortunate sufferer continues to wheeze away, and gasp and fight for his breath, until the attack has worn itself out and reduced him to a condition of utter prostration. By the addition of chlorate of potassium to the solution used in making these papers, their utility is greatly increased. As this is a point of considerable practical importance, we must enter somewhat fully into their mode of preparation. It would be well if the papers were prepared by the asthmatic himself, or under his immediate superintendence or, if this is impossible, they should be made by someone on whom he can place implicit reliance. The materials requisite are three in number—some large sheets of blotting-paper, and some nitre and chlorate of potassium. In the first place, some water should be put to boil in a large shallow saucepan, or other similar utensil. The porcelain dishes used by chemists are extremely useful for this purpose, particularly as they can be placed on a tripod or retort-stand, and kept hot by means of a lamp. Into the water should be thrown equal quantities of the two salts which are to be dissolved in it. There is no occasion to weigh them, but a handful of each may be thrown in as frequently as may be necessary. Whilst the water is getting hot, and the salts, aided by a little occasional stirring, are being dissolved, the paper may be cut up. The best blotting-paper to use for this purpose is the white, because it is usually thicker, and absorbs more. It should be cut or torn into pieces of about six inches square, which should be piled one on the top of the other, each mound consisting of six pieces. Whilst this process is in progress the water will have been boiling, and will have taken up as much of the salts as it can dissolve. It is essential to supply the salts freely, so that a perfectly saturated solution may be obtained. All being in readiness, a pile of paper should be plunged in the boiling solution, and kept under the surface till it is thoroughly wet through. It is then to be taken out, and placed on a board, or better still, on a grating and allowed to drain. The solution is to be kept boiling over the lamp or fire, and as fast as one pile of paper is finished another is to be plunged into the solution. If the operator is not very expert in the matter, he had better use an old knife for fishing the paper out of the water, or he will assuredly scald his fingers. When the solution is exhausted, the process may be stopped, and attention given to the piles which have been already prepared. The different layers of paper will be found to be adherent, and the whole mass will resemble a piece of damp card-board. The papers should then be placed in the warm—preferably in the sunshine—and allowed to dry at their leisure. If dried before the fire care must be taken that they are not ignited by an accidental spark. When dry they may be sprinkled over with a few drops of tincture of sumbul, spirits of camphor, or any other agreeably smelling substance.

When finished, they will be hard and stiff, and both surfaces will be studded with small acicular crystals.

The mode of using these "nitre tablets," as they may be conveniently called, is sufficiently simple. One of them is doubled across the middle, and placed, tent-wise, on some non-inflammable substance, and then ignited at each extremity of the fold. The tablet will burn vigorously, with the production of considerable heat, and a large volume of dense smoke. Especial care must be taken not to put the tablet near the bed. It should not be lighted on a plate, as there is a risk of breaking it, but the coal-scuttle, or an old sheet of tin, may be utilised for this purpose.

Many an attack of asthma has been cut short by the employment of these papers, and their use has proved a boon to many a sufferer. The nitre papers sold in the shops are usually too weak to prove of much service in bad cases.

NITRITE OF AMYL.—Nitrite of amyl is a yellowish fluid, having a powerful and peculiar odour, somewhat resembling that of pine-apples.

When inhaled, even in very small quantities, it produces almost immediately flushing of the face, and a sensation of pulsation all over the body. It may be convenient to have an agent which will enable one to blush at pleasure, but it must be admitted that the accompanying sensation is far from pleasant. From certain experiments made on animals with this drug it was concluded that it would exert a beneficial effect on *angina pectoris,* or the suffocative breast pang. The supposition was correct, and we have now the means of curing, or at all events alleviating, a disease in the presence of which we were formerly helpless.

The amyl is, in these cases, used in the form of inhalation, for it fails to act with anything like the same certainty when taken internally in the ordinary way. A bottle containing two or three drachms is procured, and of this two or three drops are poured on a pocket-handkerchief, and gently inhaled until the effects of the drug are experienced. It is advisable for the first inhalation to be performed in the presence of the medical attendant, but subsequently the patient should learn to administer it for himself. After a time people become habituated to its use, and from five to ten drops may be poured on the pocket-handkerchief, or the bottle may be held quite close to the nose, without the production of any unpleasant symptoms. The nitrite of amyl should be kept in a stoppered bottle, but even in spite of this it after a time becomes stale and flat, and the supply must be renewed.

Nitrite of amyl is an excellent remedy for those " heats and flushes " to which many women are subject. In these attacks not only does the patient feel hot, but she turns red all over. They may last only a few minutes, but sometimes an hour or more, and they may be repeated several times a day. They are usually attended with perspiration, which may be very profuse. In these cases the nitrite of amyl should be given according to Pr. 52. A dose should be taken every three hours, and an additional dose on the first appearance of the flush. Relief is often obtained at once, but sometimes not until the medicine has been taken for a week or more. As the patient grows accustomed to the remedy, it is often necessary to increase the dose.

NITROGLYCERINE or TRINITRINE. — Nitroglycerine is not only a powerful explosive but one of our most valued therapeutical agents. It exerts an action on the blood vessels which is distinctive and characteristic from nitric and sulphuric acids and glycerine.

It is prepared by a chemical process which the British Pharmacopœia has very wisely refrained from describing in detail. This reticence is perfectly justifiable, for any attempt to prepare this powerful substance without special precautions would probably be attended with disastrous results.

It is illegal to keep or store any preparation of nitroglycerine, but a tacit exception is made in the case of chemists who keep small quantities for the sole purpose of dispensing prescriptions.

The preparation of nitroglycerine officially recognised is a one per cent. solution in spirit. This liquid is non-explosive, and can be manipulated with perfect safety. The dose of nitroglycerine employed in medicine is a very small one—only a few drops of this one per cent. solution.

When taken by a healthy person it rapidly dilates the blood vessels and produces an intensely disagreeable sensation. People vary much in their susceptibility to the action of this drug, but many people after taking only a single drop of the one per cent. solution—that is, a hundredth of a grain of the pure drug—experience throbbing in the head, persistent headache, and very often either nausea or drowsiness.

A doctor who publicly expressed his disbelief in the possibility of so small quantity of any drug having any action on the system, consented to try the experiment on himself. He gives the following account of his experiences:—

" After swallowing this small quantity of fluid—it could not have exceeded two drops—I asked what effects I was to expect, but was told to wait and observe for myself. I then purposely conversed on other subjects. In about three minutes I experienced a sensation of fulness in both sides of the neck, and to this succeeded nausea, and I said, 'I shall be sick.' The next sensation of which I was conscious was as if some of the same fluid was being poured down my throat, and then succeeded a few minutes of uncertainty as to where I was, during which there was a loud rushing noise in my ears like steam passing out of a tea-kettle, and a feeling of constriction around the lower part of my neck, as if my coat were buttoned too tightly; my forehead was wet with perspiration, and I yawned frequently. When these sensations had passed off, which they did in a minute or so, they were succeeded by a slight headache, and a dull heavy pain in the stomach, with a decided feeling of sickness, though without any apprehension that it would amount to vomiting. I lay on the sofa feeling rather languid, but talking cheerfully, conscious at the same time that I could very well exert myself both mentally and physically if I liked, but that it was more pleasant to be idle. This condition lasted about half an hour, at the end of which I was quite well, and walked home a distance of half a mile with perfect confidence." This gentleman appears to have been somewhat susceptible to the action of the drug, for although these symptoms usually follow its administration, yet in the majority of people a larger dose is necessary to produce them.

It is this peculiar and characteristic action of dilating the blood vessels which renders it so valuable in the treatment of many diseases.

That terrible complaint angina pectoris, which is so largely on the increase and carries off so many of our cleverest men and women, is due to a spasmodic action of the small arterioles. Unless these blood vessels can be restored at once to their normal condition the patient dies. Nitroglycerine is the drug on which the greatest reliance is placed for exerting this action. To be of any use it must be administered at once, for the delay of only a few minutes may make the difference between life and death. The sufferer should always carry with him, in a readily accessible pocket, a little bottle of the one per cent. solution diluted with water. The best authorities state that the action of the drug is promoted by the addition of a few drops of chloric ether, tincture of capsicum, or peppermint water.

As a bottle, however small, is inconvenient to carry, and is always in danger of being broken, steps have been taken to have this useful drug put up in the form of tabloids. The trinitrine tabloids, as they are called, contain one hundredth of a grain in each. Tabloids are also made which contain one hundredth of a grain of nitroglycerine, and a quarter of a grain of nitrite of amyl. The compound trinitrine tabloids which are much more powerful, contain one hundredth of a grain of nitroglycerine, a quarter of a grain of nitrite of amyl, and a fiftieth of a grain each of menthol and capsicum.

It is impossible to lay down definite rules for the administration of this powerful drug. There are so many points which have to be taken into consideration, such as individual susceptibility, the organic condition of the heart and blood vessels, and the severity and frequency of the attacks, that it is absolutely necessary to consult a physician.

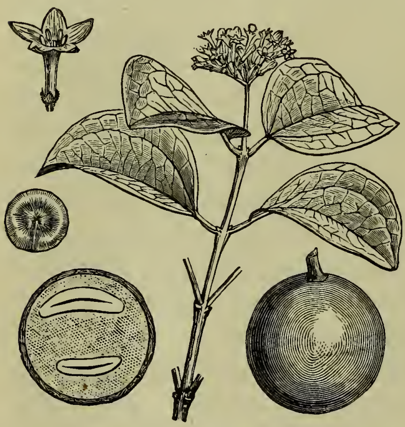
The use of nitroglycerine in medicine is by no means confined to its administration in angina pectoris. It is largely employed to counteract the effects of shock, and is of the greatest value in severe accidents, and to restore the patient after surgical operations.

It has been employed with much success in some forms of Bright's disease, and has been employed with advantage in neuralgia and sick headache.

In the treatment of sea-sickness it has obtained a well-earned reputation, and is frequently prescribed in this distressing condition.

Nitroglycerine is usually administered by the mouth, but when the patient cannot swallow it may be given hypodermically.

NUX VOMICA and STRYCHNINE.—The nux vomica tree is a native of the East Indies, and grows abundantly on the coast of Coromandel, flowering during the cold season. It is a member of the venomous strychnia family, which, curiously enough, is botanically so closely allied to the natural orders yielding gentian and the common bark, that it has been found impossible to define any strict line of demarcation. It is a middle-sized tree, with a short, crooked, thickish trunk, irregularly branched, and covered with a smooth ash-coloured bark. The leaves are ovate in shape, shining, smooth on both sides, and marked with five distinct nerves; the flowers are small, greenish-white in colour, and exhale a strong, disagreeable odour. The fruit is round, about the size of a large apple, of a rich orange colour, filled with a soft jelly-like pulp, containing the seeds, generally five in number. These seeds are about the size of a shilling, and are covered with a soft woolly substance of a pretty grey colour. They are hollow on one side, whilst the other is convex and furnished with a boss or top-knot, so that they remind one irresistibly of a very little Chinaman's hat. They have an intensely bitter taste, and are extremely hard—so hard, indeed, that they are powdered with the greatest difficulty, and have often to be filed down. The whole plant is pervaded with that deadly poison, strychnia, the greater portion residing in the seeds and bark. The nuts prove fatal to dogs, horses, hares, wolves, foxes, cats, rabbits, rats, birds, and in fact, so far as we know, to every living creature. It is very generally believed in many parts of the country that nux


NUX VOMICA.

vomica—commonly called "rat's-bane"—although poisonous in the case of all the lower animals, may be taken with impunity by human beings, an opinion which we need hardly say is utterly without foundation. Another and, if possible, still more absurd superstition, is that all animals born blind are protected from its influence. Powdered nux vomica is largely used for the purpose of destroying vermin, it, or the alkaloid strychnia, being the active ingredient in nearly all the vermin and insect-killers. It has occasioned many deaths, chiefly as the result of suicide, for, owing to its bitter taste, its presence in an article of food would be at once detected in any attempt to murder. Strychnia, though equally bitter, might possibly be given in a pill without the peculiarity of its taste being noticed.

The symptoms produced by large doses of strychnine or nux vomica resemble those occurring in the course of the disease known as tetanus or lockjaw. Soon after the fatal dose has been taken the patient is suddenly seized with a feeling of suffocation, and complains of great difficulty in breathing. He is restless and uneasy, and there are twitchings and jerkings of the head and limbs—a shuddering or trembling of the whole frame. Convulsions then commence suddenly—the limbs are stretched out, and the hands clenched, the head is jerked violently backwards, and the whole body becomes as stiff as a board, and is arched in the form of a bow, the patient being supported only on his head and heels. The chest is fixed by the spasm, so that breathing is for the time arrested, and the face assumes a dusky, congested appearance, with a wild, drawn, anxious aspect, the eyeballs being prominent and staring, and the lips livid. Sometimes the muscles of the face are contracted in such a manner as to make it assume a most ghastly grin. Shooting pains like electric shocks are experienced in various parts of the body, often first in the back, and then down the legs and arms. Each spasmodic attack lasts for a minute or more and then ceases altogether for a time. Throughout the paroxysms the mind remains perfectly clear, and the patient's sufferings are agonising. The slightest touch, a breath of air, the movement of the bed-clothes, the most trivial cause will at once excite the spasm. The consciousness of the accession of the fit is very remarkable. The patient calls out loudly, "It is coming!" and screams and shrieks, "Hold me! hold me!" In vain he seeks for relief in gasping for air and in requiring to be turned over, moved, or held. Sometimes there is frothing at the mouth, and this froth is generally mixed with blood from injury to the tongue. The muscles which move the jaw, although the first to be affected in the lockjaw of disease, usually escape till near the end in this form of poisoning. In a fatal case death is rapid; and if the patient survive two or three hours, sanguine hopes may be entertained of his recovery. The fatal termination may be due either to exhaustion from the repeated convulsions, or to suffocation from paralysis of the muscles of the chest. Death under these circumstances is indeed horrible, and after witnessing a scene such as we have described, one naturally exclaims with the poet,

> By many a death-bed I have been,
> And many a sinner's parting seen,
> But never aught like this."

For medicinal purposes, we use three preparations containing strychnine—viz., an extract of nux vomica, a tincture of nux vomica, and a solution of strychnine. These are all "official" articles—that is, they find a place in the British Pharmacopœia—and may, of course, be used in appropriate cases with perfect safety.

Nux vomica has attained a great and widespread reputation in the treatment of indigestion and disorders of the alimentary canal. It is especially valuable in the case of people who become nervous and dyspeptic as the result of over-work, and much mental worry. Many business people—city men, for example—who suffer from headache, sleeplessness, weight after food, and constipation, experience much benefit from a course of this medicine. It should be given when the food lies like a load at the stomach, and especially when there is heartburn accompanied by flatulence. The sensation of heat and weight at the top of the head, which is often an accompaniment of these symptoms, may also be removed by the same means. The best and most useful preparation for all these cases is the tincture of nux vomica, given in the form of tabloids (T. 57). These tabloids will be found of considerable value in the treatment of habitual constipation. It is not meant that because the bowels are upon any one particular occasion confined that nux vomica is to be taken, but that when constipation is a constant source of trouble it will afford relief. It does not act as ordinary purgatives do, but gives tone to the walls of the alimentary canal, and in this way stimulates them to action. Should the inefficient action of the bowels be due to a defective secretion of bile, the motions being pale in colour, nux vomica will probably prove of little benefit.

Nux vomica is one of our pleasantest bitters, and six or eight tabloids taken in water or in a wine-glassful of infusion of gentian, about half an hour before meals, will improve the appetite and digestion.

In many affections of the nervous system this mixture may be employed with advantage. It often proves of benefit in paralysis, and even in cases in which it fails to effect a cure it may prevent the further wasting of the limbs. In these cases, two table-spoonfuls of the mixture (Pr. 44) should be taken three times a day.

Its action is very conspicuous in sick-headache, particularly when this common and troublesome complaint can be traced to some error in diet, or to a confined state of the bowels. It is advantageous in these cases to take a tea-spoonful dose every five or ten minutes to the extent of eight or ten doses, and then to continue the medicine at longer intervals.

It is useful, too, in headaches occurring in strong, robust adults, who also suffer from giddiness, flushed face, and constipation. In these cases tea-spoonful doses of nux vomica mixture taken frequently will prove most effectual.

The morning vomiting and trembling of the hands of those who over-night have dined not wisely but too well, may be controlled by the same means.

There are two other drugs derived from the same family as strychnia which merit at least a passing notice. These are St. Ignatius's beans, and the woorara poison.

The tree producing ignatia, or the seeds of St. Ignatius, is indigenous to and abounds in the Philippine Islands. The fruit is pear-shaped, and each contains about twenty seeds. Their properties were first discovered by the Jesuits, and named after their patron. These, like nux vomica, contain a considerable amount of strychnia, and it is doubtless to this substance that they owe much of their energy, although they have properties which are peculiarly their own. A tincture is usually made containing the drug in the proportion of one to ten. This should be mixed with ten times its volume of water, and of this drop-doses may be taken hourly. It is recommended in the treatment of hysteria, and may be given with advantage to either men or women who are hysterical. In some forms of neuralgia it has proved of considerable value.

The curari or woorari, although of no practical use in medicine, has attracted considerable attention from its employment by physiologists in the performance of experiments on animals. It was at one time said simply to paralyse the animal, and not in the slightest degree to deaden its sufferings, but there are reasons for supposing that an animal under its influence is quite insensible to pain. It is the arrow poison which is used by the Indians for the destruction of game. It is prepared by them with a great deal of mystery, and is mixed with other herbs, with red and black ants, and with the pounded fangs of a venomous snake. It, like the serpent poison, is almost inert when swallowed, but is a deadly poison when introduced into the system through a wound.

OAK-BARK—GALL-NUTS—TANNIC ACID—GALLIC ACID.—The British oak, as is well known, is a majestic forest tree distinguished above all others by the slowness of its growth, its great size and longevity, and the value of its wood. There are two distinct species of oak in England, which are known as the "pedunculate," and the "sessile." They are readily distinguished, for in the former the acorn is provided with a stalk or peduncle, whilst on the latter it is sessile or stalkless. As we have already said, the oak is a tree which attains a great age, and its wood is almost useless for the purposes of art until half a century has passed over its head. There are now oak-trees growing in this country which chronicle upon their furrowed trunks ages before the Conqueror.

The only part of the tree which is used for medicinal purposes is the bark, which is usually separated in the spring or early summer. We obtain it in pieces of one to two feet in length, which vary a little in their appearance according to the age of the stem, or branch, from which they have been taken. The bark of young stems is thin, moderately smooth, covered externally with a silvery or ash-grey cuticle, and is frequently beset with lichens; internally it is, in the fresh state, whitish, but when dried brownish-red and fibrous. The bark of old stems is thick, very rough externally, cracked and wrinkled, and it is usually of inferior quality.

The oak-bark is made into a decoction in the following manner:—Boil 1¼ ounces of bruised oak-bark in one pint of water for ten minutes in a covered vessel, then strain, and wash the bark with enough water to make one pint of the decoction. Its principal value in medicine arises from its astringent properties. It forms a perfectly safe, useful, and economical lotion, gargle, or injection. As a gargle it is useful in that common and disagreeable complaint, a relaxed sore throat. As an injection it is employed with advantage for all kinds of discharges, and its efficacy may be greatly increased by the addition of a couple of teaspoonfuls of alum to every pint. Internally it may be given in all kinds of bleeding from the lungs and stomach, in doses of two to three table-spoonfuls, or more. (*See* HAZELINE.)

There is another species of oak growing in England known as the gall or Dyer's oak. It is a native of Asia Minor, but is now commonly met with throughout this country. It seldom exceeds the height of six feet, and the stem is crooked, so that it has rather the features of a shrub than of a tree. The acorn is nearly sessile, smooth, cylindrical, and is two or three times as long as its cup, which is slightly downy, and is covered with indistinct scales. This is the species which yields the nut-galls of commerce. These excrescences are produced on the young branches by a small insect which punctures the tender shoot with a curious spiral sting, and deposits its eggs in the aperture so made. In a few hours the surrounding tissues swell, a tumour is produced, and the eggs become enclosed in a fleshy chamber, which serves not only for shelter and defence but also for food, for the larvæ feeding upon the interior there undergo their metamorphosis. In fact, it is a comfortable situation with "all found." No production of Nature seems to have puzzled the ancient philosophers more than galls. An old writer of repute ascribed their origin to spontaneous generation, and gravely states that weighty prognostications as to the events of the ensuing year may be deduced by ascertaining whether they contain spiders, worms, or flies. Other philosophers who knew that, excepting by rare accidents, nothing is found in galls besides different kinds of grubs, which they rationally conceived to spring from eggs, were very much at a loss to account for the conveyance of these eggs into the middle of a substance provided with no aperture. Finally they settled the question, very much to their own satisfaction, by deciding that they were insects' eggs deposited in the earth which had been drawn up into the tree along with the sap, and after passing through different vessels had stopped in

OAK BRANCH.

the twigs, and had there hatched and produced the galls. The theory was undoubtedly ingenious, the only objection to it being that, like many a modern theory, it had no foundation in fact.

Gall-nuts are more or less globular in form, hard, about the size of a marble, and covered externally with a number of little knobs or tubercles. There are two varieties, the blue and white galls: the former, the produce of the first gathering, before the fly has escaped from its prison, is of a blackish-blue or deep olive colour ; the latter, which is of superior quality, is of a greyish colour, and is provided with a small hole by which its late tenant departed.

Both varieties of gall-nuts contain two very useful substances known as "tannic acid" and "gallic acid." Tannic acid is obtained in the form of a light glistening spongy mass or powder, having a very astringent taste, and dissolving freely in water. Gallic acid occurs in white or pale fawn-coloured silky crystals, which are also freely soluble in water. As the gall-nuts owe their astringency to the presence of these two acids, the medicinal uses of the three bodies are almost identical.

There are few more useful medicines than "glycerine of tannic acid." It may be obtained at any chemist's, or made as follows:—Rub together, one ounce of tannic acid and four fluid ounces of glycerine in a mortar, then transfer the mixture to a porcelain dish, and apply a gentle heat until a complete solution is effected. It should be kept in a wide-mouthed bottle with a long-handled camel's-hair brush for convenience of application.

It is useful in many affections of the nose. Thus, after measles, scarlet fever, and some other diseases, the nostrils often become sore and red and discharge freely, the secretion not only blocking up the nose and causing a disagreeable feeling of stuffiness, but also running down on the upper lip and scalding it. A single application of the glycerine of tannin with the brush will often effect a cure, although the nose should be previously thoroughly cleansed, so that the astringent may come in actual contact with the sore surface. The application should be made freely and without hesitation.

Sometimes the discharge from the nose is in young adults thick, lumpy, of a greenish colour, and very offensive in odour. The scabs may be half an inch long, and are expelled with difficulty, the unfortunate sufferer having to blow his nose over and over again before he can get rid of them. Thoroughly brushing out the inside of the nostrils with the glycerine of tannin will usually give relief, and does much towards removing the disagreeable smell. When the seat of the disease is apparently too far back for the brush to reach it, the glycerine of tannin may be poured into a wash-hand basin with a little water, and then snuffed up the nostrils. The condition to which we have referred is generally known as ozæna.

Glycerine of tannic acid forms a valuable application in discharges from the ear, a common complaint in weak, unhealthy children after long illnesses. A few drops should be poured into the ear, and retained there by a little cotton-wool. A single application often effects a cure, but should it not do so it must be repeated.

Glycerine of tannic acid is useful in affections of the throat. In many cases it acts like a charm. In a relaxed sore throat there is nothing better than swabbing out the throat with this substance. The patient should sit in a chair with his head slightly thrown back and his mouth wide open. The operator who is about to perform the friendly office for him now dips the brush in the glycerine of tannin, and when it is thoroughly covered thrusts it into the open mouth, taking good care to go right to the back of the throat. The patient generally expectorates freely and forcibly, and it is a good plan to get behind him as soon as the application is finished. A basin or other utensil should be provided for the patient to spit into. If he does not at once express his relief it is because the astringency of the preparation prevents him from uttering the words of gratitude. The tannic acid gargle (Pr. 82) may in addition be used three or four times a day. Enlargement of the tonsils may often be treated with advantage in the same way.

Many long-standing coughs which are supposed to indicate that the sufferer is "going into a decline" are entirely dependent on a relaxed condition of the throat, and may be cured in a few days by the use of glycerine of tannic acid.

Deafness is often due to the throat, and when such is the case it often yields to this method of treatment.

Tannic acid lozenges are sometimes used in the cases in which we have recommended the application of the glycerine of tannin, but they are far less efficacious, and not so likely to afford relief.

Gallic acid given internally is a very valuable remedy for bleeding from the lungs, stomach, womb, kidneys, and in fact from any internal organ. It should be kept in powders, each containing fifteen grains, one of which may in any of these cases be at once dissolved in a little water and tossed off. When the glycerine of tannin only is at hand this may be employed mixed with water in two tea-spoonful doses. The medicine should be repeated at intervals of four hours. The astringent mixture (Pr. 29) contains gallic acid, and is useful in all these cases. In many cases of Bright's disease benefit may be obtained by the use of gallic acid in fifteen-grain doses every four hours. Two table-spoonfuls of the mixture contain this dose.

We have already had occasion to refer to the use of an ointment of galls and opium for the relief of piles. (*See also* HAZELINE.)

OPIUM and MORPHINE.—We must now consider the characters and properties of that subtle and mighty drug opium, the gift of God to suffering humanity, the dread agent of unimaginable pleasure and pain.

It is obtained chiefly from the white poppy (*Papaver somniferum*), which is cultivated for the purpose in Egypt, Persia, Asia Minor, India, and other warm countries. It is probable that this, our common garden poppy, is a native of the East, which has become naturalised in the South of Europe. It is raised in large quantities at Mitcham, in Surrey, chiefly for the sake of the heads, and it grows wild on the sandy banks of the fen ditches in some parts of Norfolk and Cambridgeshire. It is a hardy annual, flowering in July, and varying somewhat in the form and colour of its rich, beautiful double petals.

The process of obtaining the drug consists essentially in making cuts into the unripe capsule, and collecting the juice which exudes. In Asia Minor they carry the incision in a line round the circumference, or in a spiral from apex to base, whilst in India it is customary to scarify the capsule from top to bottom. The white milky juice is allowed to dry into tears, and is then scraped off and pressed together so as to form a homogeneous mass, after which it is dried in a warm, airy room. The opium manufacturers suffer no inconvenience from the nature of their employment, contact with crude opium and breathing air impregnated with the emanations from the drug apparently exerting no injurious influence on the system. During the operations of drying, packing, and examining opium, immense quantities necessarily pass through the hands of those engaged in the process, but no complaints are made of any ill effects resulting from contact with the drug. The native opium examiners often sit for hours together in the midst of tons of opium, samples of which they are constantly manipulating and smelling, and yet they, as a rule, enjoy the most perfect health. This immunity contrasts strongly with the suffering of workers in lead and mercury, to which we have already alluded. These facts, however, are not to be regarded as an indication that opium used externally is under all circumstances inert. Thus laudanum applied to an ulcerated or abraded surface will produce poisonous effects—not so quickly, it is true, as when administered internally, but with equal certainty. A few years ago a child was accidentally killed by the application of opium and water to the surface of an extensive scald.

THE OPIUM POPPY.

There are several varieties of opium, of which the most valuable and best known are the Smyrna, Constantinople, Egyptian, and Indian. In this country the poppy has been occasionally cultivated for the purpose of obtaining opium, and specimens have been produced which were ascertained to be in no way inferior to the Oriental. Opium is a solid, compact substance, of a dark reddish-brown colour, opaque, soft and tenacious when fresh, but when long kept, hard and readily powdered. It has a strong, heavy, peculiar, and somewhat disagreeable smell, and a nauseous taste. It is inflammable, and burns with a bright flame. It is partly soluble in water, forming a solution of a dark brown colour. The Smyrna opium is imported in rounded or flattened masses, which are enveloped in leaves; whilst the Egyptian is made into cakes of about three inches in diameter. The Bengal opium is peculiar, it being sent over in hard, round balls, nearly as large as a child's head, and looking very much like a 24-pound shot. The smell of opium is so essentially *sui generis* that no difficulty is experienced in recognising the drug in whatever form it may occur.

Opium is not a simple substance, but consists of a number of principles, of which morphia is at once the most powerful, and, to us, the most familiar example. Opium, like most other expensive drugs, is not uncommonly adulterated, and frequently contains mechanical impurities, such as stones, sand, clay, bullets, and even cow-dung, all of which are readily detected by breaking up the mass in cold water, and allowing the heavy particles to subside. Other substances, such as sugar, treacle, and flour, are used for a similar purpose, but the fraud seldom succeeds with those who are practically acquainted with the colour, aroma, and texture of the drug. The value of any individual specimen depends chiefly on the percentage of morphia which it contains.

There are several forms in which opium may be given, and there are many preparations into the composition of which it enters. For external application we have the plaster and liniment, and an ointment of galls and opium, which is a favourite application for piles. Then we have an electuary or confection of opium, which is seldom used; and the opium lozenge. It is an essential constituent in the compound soap pill, of Dover's powder, and of the aromatic powder of chalk and opium. Laudanum is a tincture of opium; whilst a weaker preparation, combined with certain aromatic substances, is known as paregoric or paregoric elixir. The liquid extract of opium and opium wine are of nearly the same strength as the tincture, for they contain a grain of opium in about twenty-five drops. "Black drop," a strong preparation of opium, the exact composition of which was kept secret, has now almost entirely fallen out of use.

Apomorphine derived from morphine is a powerful emetic and expectorant, and is not a narcotic.

We must now consider the effects produced by the internal administration of opium. A small dose, such as half a grain of solid opium, or from ten to twelve drops of laudanum, usually acts as a stimulant to those who are not habituated to its use. The pulse soon becomes stronger and quicker, the mind is exhilarated, the ideas flow more rapidly, a pleasurable, or even luxurious, sensation is experienced, and for a time there is an increased capacity for bodily and mental exertion. These symptoms are followed by a diminution of muscular power, by drowsiness, a desire for repose, and a tendency to sleep. The mouth and tongue become dry, and hunger is diminished, though thirst is often increased. When a larger dose is given the mind is apparently elevated to such an extent as to produce intoxication, or even delirium, and the various functions, both mental and corporeal, are invigorated. These effects, however, are of short duration, and are soon followed by languor and drowsiness; the sensibility to external impressions is impaired, so as to induce sleep, which is attended by dreams, sometimes pleasant, but frequently of a most painful character. In many instances this stage is accompanied by languor, nausea, vomiting, thirst, and headache. The stimulating operation of opium generally continues about an hour, but the sedative effects usually last from six to eight hours. It is now recognised that opium may be given so as to obtain from it stimulating and also depressing effects, and that the former are primary, and are obtained from it in a moderate dose, while the latter are secondary, and are produced only by a larger dose.

There is no form of poisoning so common as that by opium and its various preparations. In two years there were 196 people killed by the intentional or accidental administration of opium, and this, in all probability, forms but a small proportion of the actual number of cases, as recoveries where medical aid is at hand are by no means infrequent. When a poisonous dose has been taken the primary stage of excitement is of very brief duration, and great giddiness, with an irresistible craving for sleep, soon supervenes. The sleep rapidly passes into profound insensibility, from which the patient can be roused only with the greatest difficulty, and even then he almost immediately relapses into a state of stupor. The face is usually pale, whilst the pulse, which was at first strong, becomes so weak that it can hardly be distinguished. If the pupils of the eyes be examined, by raising the upper eyelids, they will be found very small, a condition which is characteristic of opium poisoning. The power of swallowing is gradually lost, so that phlegm and saliva collect in the throat, and after a time breathing ceases.

Sometimes it is not easy to tell whether a person who is found insensible has taken opium or has had a fit. When the case is one of poisoning, the bottle, labelled laudanum, or smelling of that substance, will usually be found in the pocket or close at hand, whilst the account given by the friends, or the circumstances under which the occurrence took place, will aid one in arriving at a correct conclusion. The odour of opium is frequently detected in the breath or vomited matters, but when the drug has been taken in beer this may not be perceptible.

The condition of the eyes is also a guide, for in opium poisoning the pupils are very small, whilst in an apoplectic fit they are usually large and frequently unequal in size.

The influence of habit in diminishing the powers of opium on the system are very remarkable. In Turkey and other Eastern nations, where the use of wine is prohibited by the established religion, it is consumed in immense quantities. It is taken with rich syrups and the juice of fruits, to make it more palatable, or it is made up into small lozenges with spices, and stamped with the words *Masch Allah*, "the gift of God."

Much of our knowledge of the effects of opium on the system is derived from the confessions of De Quincey, the English opium-eater. It will be remembered that he commenced the practice of taking opium at the recommendation of a college acquaintance for the relief of an excruciating pain in the head and face from which he had suffered for some weeks. The graphic description of his initiation into the mysteries of the drug we cannot refrain from quoting:—"I was necessarily ignorant," he says, "of the whole art and mystery of opium-taking; and what I took I took under every disadvantage. But I took it; and in an hour—oh, heavens! what a revulsion! what an upheaving, from its lowest depths, of the inner spirit! what an apocalypse of the world within me! That my pains had vanished was now a trifle in my eyes; this negative effect was swallowed up in the immensity of those positive effects which had opened before me, in the abyss of divine enjoyment thus suddenly revealed. Here was a panacea, a *Φάρμακον νηπενθής*, for all human woes; here was the secret of happiness, about which philosophers had disputed for so many ages, at once discovered; happiness might now be bought for a penny, and carried in the waistcoat pocket; portable ecstasies might be had corked up in a pint bottle, and peace of mind could be sent in gallons by the mail-coach." Opium, moreover, possesses a wonderful power of sustaining the strength and of enabling men to undergo fatigue and continued exertion under which they would otherwise inevitably sink. The Tartar couriers who travel for many days and nights use it constantly, and with a few dates or a lump of coarse bread they traverse the trackless desert amidst privations and hardships which could be supported only under the influence of the drug. Even the horses are sustained by its influence, the traveller often sharing his store of opium with his flagging steed. It is often supposed that the excitement produced by opium is similar to that resulting from indulgence in alcoholic liquors. Such, however, is not the case. De Quincey is so explicit upon this point that we need offer no apology for quoting his remarks on the subject:—

"Opium, I affirm peremptorily, is incapable of producing any state of body at all resembling that which is produced by alcohol, and not in *degree* only incapable, but even in *kind;* it is not in the quantity of its effects merely, but in the quality, that it differs altogether. The pleasure given by wine is always mounting and tending to a crisis, after which it declines; that from opium when once generated is stationary for eight or ten hours: the first, to borrow a technical distinction from medicine, is a case of acute, the second of chronic, pleasure; the one is a flame, the other a steady and equable glow. But the main distinction lies in this, that whereas wine disorders the mental faculties, opium, on the contrary (if taken in a proper manner), introduces among them exquisite order, legislation, and harmony. Wine robs a man of his self-possession, opium greatly invigorates it. Wine unsettles and clouds the judgment, and gives a preternatural brightness, and a vivid exaltation, to the contempts and the admirations, to the loves and the hatreds of the drinker; opium, on the contrary, communicates serenity and equipoise to all the faculties active and passive, and with respect to the temper and moral feelings in general, it gives simply that sort of vital warmth which is approved by the judgment, and which would probably always accompany a bodily constitution of primeval or antediluvian health. Thus, for instance, opium, like wine, gives an expansion to the heart and the benevolent affections, but then with this remarkable difference, that in the sudden development of kind-heartedness which accompanies inebriation, there is always more or less of a maudlin character which exposes it to the contempt of the bystander. Men shake hands, swear eternal friendship, and shed tears, no mortal knows why, and the sensual creature is clearly uppermost. But the expansion of the benigner feelings incident to opium is no febrile access, but a healthy restoration to that which the mind would naturally recover upon the removal of any deep-seated irritation of pain that has disturbed and quarrelled with the impulses of a heart originally just and good." Our author subsequently says:—"Wine constantly leads a man to the brink of absurdity and extravagance, and beyond a certain point it is sure to volatilise and to disperse the intellectual energies, whereas opium always seems to compose what has been agitated, and to concentrate what had been distracted. In short, to sum up in one word, a man who is inebriated, or tending to inebriation, is, and feels that he is, in a condition which calls up into supremacy the merely human, too often the brutal, part of his nature; but the opium-eater (I speak of him who is not suffering from disease or other remote effects of opium) feels that the diviner part of his nature is paramount—that is, the moral affections are in a state of cloudless serenity, and over all is the great light of the majestic intellect."

If we contrast the furious madman, the subject of delirium tremens, with the prostrate debauchee, the victim of opium, or the violent drunkard with the dreamy sensualist, intoxicated with his favourite drug, it must be admitted that the comparison is not in favour of the former. The opium-eater is, at least, harmless to everyone except himself, whilst the drunkard is not only a dangerous nuisance, but an enemy to the community at large.

It is usually stated that the elevation of spirits produced by opium is necessarily followed by a proportionate depression, and that the natural and even immediate consequence of opium is stagnation both of body and mind. This is positively denied by De Quincey, who affirms that for the ten years during which he took opium at intervals and in moderation, the day succeeding that on which he had recourse to the drug was always one of unusually good spirits. He states, too, that the primary exciting and stimulating effects always lasted with him during his noviciate for upwards of eight hours, and he was thus enabled to time the results of his dose, so that its narcotic influence corresponded with the natural hours of rest. In his earlier experiences, when he resorted to the use of opium not oftener than once in three weeks.

it never induced a desire for silence or solitude, for he owns that he frequently indulged in a debauch preparatory to a visit to the opera. This statement, however, is subsequently somewhat modified when he says:—"Yet in candour I will admit that markets and theatres are not the appropriate haunts of the opium-eater when in the divinest state incident to his enjoyment. In that state crowds become an oppression to him; music even too sensual and gross. He naturally seeks solitude and silence, as indispensable conditions of those trances or profoundest reveries which are the crown and consummation of what opium can do for human nature. . . . The remedies I sought were to force myself into society, and to keep my understanding in continual activity on matters of science. But for these remedies, I should certainly have become hypochondriacally melancholy. In after-years, however, when my cheerfulness was more fully re-established, I yielded to my natural inclination for a solitary life. And at that time I often fell into those reveries upon taking opium, and more than once it has happened to me when I have been at an open window, in a room from which I could overlook the sea at a mile below me, and could command a view of the great town of L——, at about the same distance, that I have sat from sunrise to sunset motionless, and without wishing to move."

By degrees, as the habit of opium-eating becomes more and more confirmed, the drug loses its stimulating effects on the system, and the beatific intoxication so eagerly yearned for by its devotees is no longer produced. The dose is gradually increased, but even this, the last resource of the unfortunate victim of a baneful habit, in time proves unavailing, and an indescribable agony, both mental and corporeal, is the penalty paid for former indulgence. This is accompanied by a state of incapacity and feebleness, and of intellectual torpor in which the most ordinary mental exertion is performed with the greatest difficulty. De Quincey, speaking of his condition during the four years that he was under the Circean spells of opium, says:—"But for misery and suffering, I might indeed be said to have existed in a dormant state. I seldom could prevail on myself to write a letter—an answer of a few words to any that I received was the utmost that I could accomplish; and often *that* not until the letter had lain weeks, or even months, on my writing-table. Without extraneous aid, all records of bills paid or to be paid must have perished, and my whole domestic economy must have gone into irretrievable confusion." We are told in the biographies of Coleridge, another great opium-eater, that a prominent feature of his character was procrastination, and that he was strikingly deficient in that steady persevering determination which is alone the precursor of success, and the parent of all great actions. It is to this condition that De Quincey refers when he says:—"The opium-eater loses none of his moral sensibilities or aspirations; he wishes and longs as earnestly as ever to realise what he believes possible, and feels to be exacted by duty; but his intellectual apprehension of what is possible infinitely outruns his power, not of execution only, but even of power to attempt. He lies under the weight of incubus and nightmare; he lies in sight of all that he would fain perform, just as a man forcibly confined to his bed by the mortal languor of a relaxing disease, who is compelled to witness injury or outrage offered to some object of his tenderest love; he curses the spells which chain him down from motion, and he would lay down his life if he might but get up and walk; but he is powerless as an infant, and cannot even attempt to rise."

The dreams, both waking and sleeping, which emanate from habitual indulgence in opium are of a maddening, frenzied character, and are to the unfortunate sufferer simply overwhelming in the reality of their unreality. De Quincey says:—"I was stared at, hooted at, grinned at, chattered at by monkeys, parroquets, by cockatoos. I ran into pagodas, and was fixed for centuries at the summit, or in secret rooms: I was the idol; I was the priest; I was worshipped; I was sacrificed. I fled from the wrath of Brama through all the forests of Asia; Vishnu hated me; Siva laid wait for me. I came suddenly upon Isis and Osiris; I had done a deed, they said, which the ibis and crocodile trembled at. I was buried for a thousand years in stone coffins with mummies and sphinxes, in narrow chambers at the heart of eternal pyramids. I was kissed with cancerous kisses by crocodiles, and laid confounded with all unutterable slimy things amongst reeds and Nilotic mud."

Let us turn now for a moment to the consideration of a question which is frequently asked, but is by no means easily answered. Is opium-eating common in this country? We believe that in some parts of England the custom is extremely prevalent, but this opinion, as may be imagined, rests solely on circumstantial evidence. It is well known that the quantity of opium imported into this country is much greater than is needed for strictly legitimate medical purposes. Many chemists have regular customers who come for their opium with as much regularity, and quite as much as a matter of course, as other people go to the public-house for their beer. It is not, it is true, usually drunk on the premises, but there are exceptions even to this rule, and people are known who would toss off their glass of laudanum with as much gusto as we dispose of our glass of bitter. The proceedings of the law courts occasionally disclose the fact that whole families have for years been opium-eaters without the circumstances attracting any attention on the part of their friends and neighbours. Students of biography know that some of our most eminent modern poets and philosophers have derived inspiration from this mighty drug. Medical men are often, in the course of their professional avocations, brought in contact with people who for years have constantly taken opium, and such cases are by no means uncommon amongst the inmates of our hospitals and workhouses. It is to be feared that opium-eating pervades all classes of society, from De Quincey to John Jasper, from Coleridge to Miss Gwilt. Is there any mark by which an opium-eater can be recognised? We believe not; although it is said by some writers that an opium-eater can be instantly recognised by his appearance. We are told that a total attenuation of the body, a withered yellow countenance, a lame gait, a bending of the spine, and glossy, deep sunken eyes, betray him at the first glance. These symptoms may perhaps be observed in those who are habituated to the use of inordinate quantities of opium, but they are certainly not characteristic of those who take the drug occasionally and in moderation. The opium-eaters whom we have seen have been in appearance very much like ordinary mortals, and it may be fairly assumed that it is only when the drug is used in large quantities that it sets its distinctive mark on the victim. The habitual drunkard is at once recognised, even the little boys in the street indicating the facility with which the diagnosis is made, but there is nothing characteristic of a teetotaller, nothing by which we can distinguish him from his fellow-creatures who take their glass of bitter or pint of claret at lunch or dinner every day of their lives. And so it is with the opium-eater; if he can only keep his vice within bounds he runs very little risk of detection.

Is opium-eating injurious to the system? When taken strictly in moderation we believe that it is not to any appreciable extent. It has been too much the practice of writers on the subject to content themselves with drawing the sad picture of the confirmed opium debauchee, plunged in the lowest depths of moral and physical exhaustion, and having formed the premises of their argument from this exception, to proceed at once to involve the whole practice in one sweeping condemnation. It would be almost as rational to paint the horrors of delirium tremens, and upon that evidence to condemn at once the entire use of alcoholic liquors. The question now under consideration is not what are the effects of opium used to excess, but what are its effects, mental and physical, when taken in moderation, either as a stimulant during excessive fatigue, or a restorative and sedative after bodily or mental labour. We have the evidence of De Quincey that from 1804 to 1812, a period of eight years, during which he was a dilettante eater of opium, he enjoyed perfect health, and was, in fact, never better in his life. It was only later, when he took the drug constantly and in large quantities, that his health suffered. It is well known that the Chinese are a nation of opium-eaters, and yet they are a muscular and well-formed race, the labouring classes being capable of great and prolonged exertion under a fierce sun and in an unhealthy climate. Their disposition is cheerful and peaceable, and in general intelligence they rank deservedly high among Orientals. In China and the islands of the Indian Archipelago, immense quantities of opium are consumed by smoking. The smokable extract called *chandoo* is made into pills about the size of a pea. One of these is placed in a small tube and lighted at a lamp, the smoke being retained in the mouth as long as possible, and then expelled through the nostrils. It does not appear that the practice, when pursued in moderation, is detrimental to health. Many people have attained the age of sixty or seventy who have been well known as habitual opium-smokers for thirty years or more. As 'Er Royal 'Ighness the Princess Hopium Puffer says in "Edwin Drood," "It's opium, deary, and it's like a human creeter so far, that you always hear what can be said against it, but seldom what can be said in its praise." In spite of this evidence, however, it should be distinctly understood that we do not advocate the use of opium, and have no hesitation in saying that no one has a right knowingly to enrol himself in the category of opium-eaters. Our advice to those who may be tempted to commence the practice is most emphatically, "Don't."

When the baneful habit of opium-eating has been confirmed, it is with extreme difficulty that it is shaken off. The agony of the opium-eater when deprived of his drug is as horrible as his happiness is complete when he has taken his accustomed stimulant. On the one hand, he suffers the torments of Hell; on the other, the bliss of Paradise. Some idea of the powerful influence which opium exerts on its victims, and of the difficulty of casting off its yoke, may be formed from the following extract from a letter written by Coleridge to his friend and biographer Cottle:—

"For ten years the anguish of my spirit has been indescribable, the sense of my danger staring, but the consciousness of my guilt worse, far worse, than all! I have prayed with drops of agony on my brow; trembling, not only before the justice of my Maker, but even before the mercy of my Redeemer. I gave thee so many talents—what hast thou done with them?

"Overwhelmed as I am with a sense of my direful calamity, I have never attempted to disguise or conceal the cause. On the contrary, not only to friends have I stated the whole case, with tears, and the very bitterness of shame, but in two instances I have warned young men, mere acquaintances, who have spoken of having taken laudanum, of the dire consequences, by an awful exposition of its tremendous effects on myself. Though before God, I cannot lift up my eyes, and only do not despair of His mercy because to despair would be adding crime to crime, yet to my fellow-men I may say that I was seduced into the accursed habit ignorantly. I had been almost bed-ridden for many months, with swellings in my knees; in a medical journal I, unhappily, met with an account of a cure performed in a similar case (or what appeared to me to be so), by rubbing in of laudanum, at the same time taking a given dose internally. It acted like a charm, like a miracle! I recovered the use of my limbs, of my appetite, of my spirits, and this continued for near a fortnight. At length, the unusual stimulus subsided, the complaint returned, the supposed remedy was recurred to—but I cannot go on through the dreary history. Suffice it to say that effects were produced which acted on me by terror, cowardice, fear of pain and sudden death, not (so help me God!) by any temptation of pleasure or expectation, or desire of exciting pleasurable sensations. On the very contrary; Mrs. Morgan and her sister will bear witness so far as to say that the longer I abstained, the higher my spirits were, the keener my enjoyment—till the moment, the direful moment, arrived, when my pulse began to fluctuate, my heart to palpitate, and such a dreadful falling abroad, as it were, of my whole frame, such intolerable restlessness and incipient bewilderment, that in the last of my several attempts to abandon the dire poison, I exclaimed in agony, which I now repeat in seriousness and solemnity, 'I am too poor to hazard this.'

"Had I but a few hundred pounds (but £200), half to send to Mrs. Coleridge, and half to place myself in a private mad-house, where I could procure nothing but what a physician thought proper, and where a medical attendant could be constantly with me for two or three months (in less than that time life or death would be determined), then there might be hope. Now there is none! O God, how willingly would I place myself under Dr. Fox, in his establishment! for my case is a species of madness, only that it is a derangement, an utter impotence of the volition and not of the intellectual faculties. You bid me rouse myself! Go, bid a man paralytic in both arms to rub them briskly together, and that will cure him. 'Alas!' he would reply, 'that I cannot move my arms is my complaint, and my misery.'"

Coleridge, we are told, was at this time in a pitiable condition. His passion for opium had so completely subdued his will that he seemed carried away without resistance by an overwhelming force. The impression was fixed on his mind that he would inevitably die unless placed under constraint, and that constraint he felt could be alone afforded in an asylum.

That emancipation from the spells of opium may be obtained is shown by the case of De Quincey, who, after a seventeen years' use, and an eight years' abuse of the drug, finally succeeded in renouncing its powers. The struggle must of necessity be severe, but by steady perseverance success may be assuredly attained. De Quincey's description of his efforts to renounce the use of his old friend and enemy illustrates the difficulties which beset the path of those who determine to shake off the influence of the pernicious and enervating habit.

"Opium," he says, "I resolved wholly to abjure, as soon as I should find myself at liberty to bend my undivided attention and energy to this purpose. It was not, however, until the 24th of June last that any tolerable concurrence of facilities for such an attempt arrived. On that day I began my experiment, having previously settled in my own mind that I would not flinch, but would 'stand up to the scratch' under any possible 'punishment.' I must premise that about one hundred and seventy or one hundred and eighty drops had been my ordinary allowance for many months. Occasionally I had run up as high as five hundred, and once nearly to seven hundred. In repeated preludes to my final experiment, I had also gone as low as one hundred drops, but had found it impossible to stand it beyond the fourth day, which, by the way, I have always found more difficult to get over than any of the preceding three. I went off under easy sail—one hundred and thirty drops a day for three days; on the fourth I plunged at once to eighty. The misery which I now suffered 'took the conceit' out of me at once, and for about a month I continued off and on about this mark; then I sank to sixty, and the next day to none at all. This was the first day for nearly ten years that I had existed without opium. I persevered in my abstinence for ninety hours, that is, upwards of half a week. Then I took—ask me not how much; say, ye severest, what would you have done? Then I abstained again, then took about twenty-five drops, then abstained, and so on."

What are you to do if you are a confirmed opium-eater? If you have been for years in the habit of taking opium in small quantities, and if you find that not only has your health not suffered, but that your powers, both mental and bodily, have improved, by all means let well alone, taking especial care, however, not to increase the quantity or the frequency of the dose. This, we confess, is a hypothetical case; practically they never occur, and the circumstances which would justify you in continuing the habit of opium-eating are exceptional in the extreme. If, on the contrary, your health *has* suffered, if you feel, or if your friends notice, that you cannot work as you used to, and that you are not the man you were, you must lose no time in abandoning at once and for ever the use of the drug. Go to a medical man and tell him without reservation the circumstances of your case, and trust yourself implicitly in his hands. If you feel that you have not the power or energy to deny yourself your accustomed stimulus, and if you are in sufficiently good circumstances, do not hesitate to have a medical attendant with you constantly, to watch you day and night, and guard you from yourself and your enemy until you have attained sufficient strength of mind to take the task in your own hands. If you are not in a position to do this, place yourself under conditions in which it will be impossible for you, under any pretence whatever, to obtain access to your favourite drug. Go to a hydropathic establishment, or to some institution conducted upon a similar principle, where you can obtain nothing but what is allowed you by the physician and the rules of the place. If you like, go on a long walking tour with a strong-minded friend who is acquainted with your infirmities. Give him your purse, lest you should be tempted, and let him cater for you. You may, if you like and can, take a sea voyage, although the absence of active employment and the monotony of the life are less favourable conditions for conquering your habit. If you find it impossible to get away from your work, still do not trust to your unassisted efforts, but confide in a clear-headed friend, in your wife, or in anyone in whom you can place implicit confidence, and who will take an active and intelligent interest in your case. Do not try and cure yourself little by little by gradually reducing the dose, but take the right step and break through your bonds at one bold sweep, and never, under any circumstances, touch another drop of opium. The struggle will be a severe one, but it will not kill you. You will have a rough time of it just at first, but you must stand up and bear it like a man. If you were going to have a tooth out, would you rather have it out fang by fang, or tell the dentist to give a long pull and a strong pull, and have done with it? It is painful, but you must grin and bear it. You may break your fall, if you like, by smoking in moderation, or by taking tonics. Try the gentian and soda mixture (Pr 14), and follow this up by a course of quinine (Pr. 9) or iron (Pr. 1). Take plenty of exercise, go in for long walks and thoroughly tire yourself out, so that when you go to bed you will fall fast asleep and sleep the sleep of the innocent. Put your shoulder to the wheel, make up your mind to win, and in a month you will be another man.

Even on grounds of economy alone it may be desirable to discontinue the habit. Opium is by no means an inexpensive drug, and the man who smokes eighteenpenny cigars would probably consider himself perfectly justified in complaining of the absurd and unwarrantable extravagance of the habitual opium-eater. It must be remembered that, in the words of Dickens's "Hopium Puffer," "the market price is dreffle high just now."

It may appear almost superfluous to state that opium is one of the most valuable drugs in our *materia medica*. At the same time, it is not a drug which is to be used lightly and without due consideration. It will relieve almost all kinds of pain, but the mere fact of your having a pain is not to be considered as a justification for using opium. It is not to be used for little pains; you must wait till your pain is very bad indeed—in fact, almost agonising—before you begin even to think of opium. A man who would use opium for every little trivial ache and pain would take an 80-ton gun to go rabbit shooting. You must remember that opium is your sheet-anchor, and you must reserve it for your very bad pains.

In the first place, What will opium do for us when applied externally? A mixture of equal parts of opodeldoc and laudanum, when rubbed in over the painful spot, will usually quickly relieve neuralgia, lumbago, sciatica, and similar complaints. The same application often relieves the pain in the side resulting from pleurisy, inflammation of the lungs, and other diseases.

Laudanum rubbed into the gums, or applied on a little cotton-wool to a hollow tooth, will often cure toothache. If a drop or two should be accidentally swallowed, it is of very little consequence, as the ordinary dose for an adult is from fifteen to twenty drops.

The ointment of galls and opium is a favourite application for piles, and in mild cases will usually effect a cure. It is made by mixing eighty grains of finely-powdered galls and twenty-six grains of powdered opium with an ounce of lard.

Opium is given internally for the relief of pain and spasm of all kinds. Thus it is useful in cancer and ulcer of the stomach, and in inflammation of that organ occurring in those who habitually indulge too freely in stimulants. It will give relief in all forms of colic, even when dependent on the passage of a calculus or gall-stone. Laudanum is nearly always at hand, or is readily procurable, and a dose of from twenty to twenty-five drops in a glass of water will, in the case of an adult, usually relieve pain, from whatever cause arising. It is often advantageous to add fifteen drops of chloric ether to the mixture, but it is not essential.

In nearly all forms of diarrhœa, the administration of opium proves beneficial. It is useful not only in the ordinary summer diarrhœa, but in those severer forms which accompany the progress of typhoid fever, dysentery, and other organic diseases. It may be administered alone, as laudanum, or preferably in combination with some astringent, as we have it in the diarrhœa mixture (Pr. 28). On the other hand, drop or half-drop doses of laudanum, given hourly or oftener, will prove beneficial in an obstinately confined state of the bowels. In all cases of obstruction of the bowels, when ordinary purgatives have failed to produce an evacuation, it is desirable to resort to the use of opium.

In some forms of cough, opium, or its alkaloid morphine, may be given with great advantage. Its use is indicated in nasty little "hacketing" coughs, and when the cough is violent and frequent, but unaccompanied by expectoration. Opium should not be given when there is much expectoration, for it may cause profound sleep, during which the phlegm, not being coughed up, will accumulate in the chest, and may cause suffocation.

The following is a useful formula for allaying cough:—

Morphia Linctus—Solution of morphine, 80 minims; chloric ether, 90 minims; syrup of lemons, four ounces by measure. These are to be well mixed together, and a tea-spoonful is to be taken occasionally when the cough is troublesome. When it has to be made on a large scale, and expense is an object, treacle and water, or honey and water, may be substituted for the syrup of lemons, without in any way detracting from its efficacy. It is as well to retain the dose for as long a time as possible in the mouth, and to swallow it slowly, as by its viscidity it proves very soothing to the throat when inflamed or ulcerated. The opium and morphine lozenges of the Pharmacopœia and the lozenge pills (Pr. 69), are used for a similar purpose, but the linctus will often succeed when they have failed.

It is well known that a small dose of opium taken at bed-time will, if resorted to at the commencement of the attack, frequently cut short a cold in the head. Ten grains of Dover's powder may be taken for this purpose, or, better still, ten or fifteen drops of laudanum in a good stiff glass of grog.

Opium frequently produces sleep when everything else has failed, a matter of no little importance, for in fevers sleeplessness, by quickly wearing out the strength, is one of the most dangerous symptoms. Laudanum may be given with signal benefit in the muttering delirium occurring in the course of many severe illnesses.

Nowadays the hypodermic or subcutaneous injection of morphine plays a prominent part in the relief of pain and the treatment of disease. The drug by being introduced under the skin is more quickly absorbed than when taken in the ordinary way, and there is less likelihood of its upsetting the stomach or disagreeing with the digestive organs. It is an operation which, though perfectly simple and easy, should be resorted to only under the immediate personal advice and superintendence of a medical man.

There are certain circumstances under which opium should not be used. It is not safe to give it in Bright's disease, or when the patient is known or suspected to be suffering from disease of the kidneys. It should not be given in bad cases of bronchitis, especially if there is much difficulty in breathing, or any blueness about the face or lips. It should not be given in brain disease, as in most cases injury would result from its employment. And, above all, it should not be given to children. There are exceptions to these rules, but they are not many, and they should be departed from only under professional guidance. It is very important not to give opium to children. It is to be feared that the practice of dosing the poor unfortunate innocent with "teething powders" and "soothing syrups" is greatly on the increase, and a more pernicious or dangerous custom it is difficult to conceive. Opium is poisonous to children, a single drop of laudanum being sufficient to kill an infant. It should be distinctly understood that all the most extensively advertised "cordials," "carminatives," and "soothing syrups" contain opium in some form or other, in spite of the assertions of their proprietors to the contrary.

Chlorodyne is a popular remedy for many diseases, and is undoubtedly a valuable composition. It is said to be made as follows:—Chloroform, 4 oz.; ether, 1 oz.; rectified spirit, 4 oz.; treacle, 4 oz.; extract of liquorice, 2½ oz.; muriate of morphia, 8 grs.; oil of peppermint, 16 minims; syrup, 17½ oz.; prussic acid (2 per cent.), 2 oz. Dissolve the muriate of morphia and the oil of peppermint in the rectified spirit, mix the chloroform and ether with this solution; dissolve the extract of liquorice in the syrup, and add the treacle; shake these two solutions together, and add the prussic acid. The dose for an adult is ten drops in a little water. It is now introduced into the Pharmacopœia under the name of "Tincture of Chloroform and Morphine."

Nepenthe is a strong preparation of morphine, and is given to procure sleep.

PEPSIN.—Pepsin is the active principle of the gastric juice, and is a powerful digestive agent.

It should be prepared as follows:—The stomach of a healthy pig, sheep, or calf recently killed having been cut open and laid on a board, with the inner surface upwards, any adherent portions of food, dirt, or other impurity are to be removed and the exposed surface slightly and rapidly washed with a little cold water; the cleansed mucous membrane is then to be scraped with a blunt knife or other suitable instrument with some pressure, and the viscid pulp thus obtained is to be immediately spread over the surface of glass or glazed earthenware, and quickly dried at a temperature not exceeding 100° F. (37·8° C.). The dried residue should be reduced to powder, and preserved in a stoppered bottle.

The various brands of pepsin vary much in activity. By mixing pepsin with starch or some other equally inert substance, it is possible to sell it at a price at which pure and unadulterated pepsin could not be sold. Analytical tests have shown that the Fairchild scale pepsin is much the most active. It can be obtained in powders, in scales, and in tabloids.

The Fairchild pepsin is a valuable remedy in all forms of indigestion, flatulence, and heartburn. To obtain the full benefit of its action it is essential that it should be taken immediately after meals. To evolve the full activity of pepsin a little acid is absolutely necessary. The pepsin tabloids contain one grain of the scale pepsin with the appropriate allowance of acid. It must not be supposed that a single grain of pepsin is capable of digesting a full meal weighing, perhaps, the best part of a pound. One tabloid will digest a light repast, but after a heavy luncheon or dinner three or four tabloids should be taken. Much, too, depends on the nature of the food, for, as it is well known, some articles of diet are far more easily digested than others.

PHENACETIN.—This substance is now somewhat extensively employed. It belongs to the same class of remedies as antipyrine and antifebrin. It is an antipyretic, anodyne, and hypnotic. It has been used with success in the treatment of neuralgia and headache. It was found to be of much value in the treatment of cases which occurred in the last epidemic of influenza, speedily reducing the temperature and alleviating many of the most distressing symptoms.

It is given in the form of five-grain tabloids, one or two three times a day after meals.

In larger doses it produces profuse perspiration, giddiness, shivering, general malaise, and somnolence. It is a remedy to be used with caution.

PHENAZONE.—(*See* ANTIPYRINE, p. 5.)

PHOSPHORUS PHOSPHATE OF LIME—HYPOPHOSPHITE OF LIME.—Phosphorus was discovered about the middle of the seventeenth century, but was little used as a curative agent until some ten or fifteen years ago, when its success in the treatment of neuralgia and general nervous debility ensured for it an amount of attention and consideration it had not previously received. It is usually made by acting on bone ashes with oil of vitriol, and distilling the product with charcoal.

The prolonged inhalation of the fumes of phosphorus frequently give rise to disease of the lower jaw. This complaint was at one time very prevalent amongst those employed in lucifer match manufactories, the "dippers," or people who immerse the slips of wood in the inflammable substance, being the chief sufferers. The disease, which was known as the "lucifer match disease," usually commences with loss of appetite, and a general feeling of weakness and inaptitude for muscular exercise. This is followed by toothache, then by the loss of the teeth, more especially the grinders, and finally, by disease or even death of a portion of the jaw. These cases are far less common than formerly, and are, in fact, now rarely met with. Careful attention to good ventilation in the workshops, and more particularly to personal cleanliness on the part of the operatives, have done much to stamp out the disease, and the introduction of red or non-fuming phosphorus in the matches have practically dealt it its death-blow.

Phosphorus may be administered in solution, either in ether or olive oil, but it is much less objectionable if taken in the form of a pill. Each pill should contain one-thirtieth of a grain of pure phosphorus. The dose being so small, there is no occasion to make it into a bolus; a very little baby pill, not more than a quarter the size of the ordinary pills, will answer all practical purposes, and being so small, no difficulty will be experienced in taking it. A better method is to take the phosphorus dissolved in almond oil, and enclosed in capsules (Pr. 54). These capsules are largely used on the Continent, and form an agreeable and pleasant mode of taking nauseous drugs. The nicest of all preparations of phosphorus is the elixoid, which contains $\frac{1}{10}$ grain in the drachm. The dose is a tea-spoonful in water. It is a great advantage to be able to take one's medicine in a palatable form—it robs many of our ailments of half their horrors.

Let us now consider in what cases we may advantageously use our elixoid or capsules. First and foremost, in that horrible complaint, neuralgia. There is no doubt that the majority of people afflicted with this disease derive considerable benefit from the use of phosphorus, and many even regard it as an absolute and positive specific. We would urge sufferers who have been unsuccessful with other drugs to give the elixoid a patient trial, and we can assure them that there is every likelihood of success attending their efforts. A teaspoonful should be taken in water every three or four hours.

Phosphorus is given in a variety of diseases of nervous origin. It often proves of great value in nervous prostration, and has been used with success in angina pectoris, a disease allied to neuralgia.

We must now pass on to the consideration of two compounds of phosphorus with lime, both of which are valuable therapeutical agents.

Phosphate of lime is prepared for medicinal purposes by precipitating a solution of bone ash in spirits of salts by means of hartshorn. It is a white, tasteless, odourless powder, quite insoluble in water. It enters largely into the formation of the bones of the body, helping to build up their structure. It is of great use in young people who are outgrowing their strength, and in pale, weakly women who have been pulled down by the cares of a large family, and perhaps by over-suckling. People whose health is broken from prolonged town life, or over-work, or who from other causes are languid, hipped, and incapable of much exertion, are frequently benefited by this medicine, particularly if it be combined with some preparation of iron.

The phosphate of lime and iron powders (Pr. 77) will be found useful. They often prove of great benefit in rickets.

Hypophosphite of lime is a white pearly-looking powder made by boiling phosphorus with milk of lime. A few grains placed on the end of a knife will burn almost as readily, and with as bright a flame, as phosphorus itself.

The value of the hypophosphite of lime in the treatment of consumption is a subject concerning which some diversity of opinion still exists amongst medical men. That this method of treatment is often attended with the happiest results no doubt can be entertained. Under its influence the cough is lessened, the expectoration is eased, the night sweats become less profuse, and the patient rapidly increases both in strength and weight. The hypophosphites may be conveniently taken in the form of Fellows' "Syrup of the Hypophosphites," which is most useful as a remedy for incipient consumption, general debility, and nervous prostration.

PHYSOSTIGMA.—(*See* Calabar Bean.)

PHYTOLACCA.—This is the root of the *Phytolacca decandra*, the American "Poke Weed."

It has been largely employed in many affections of the throat, and is especially useful in the post-nasal catarrh from which singers and public speakers so frequently suffer.

It has a reputation in the treatment of chronic rheumatism, lumbago, and sciatica.

It produces not unpleasant symptoms, and has no toxic action.

There is no official preparation, but the Valoid Fluid Extract is usually prescribed.

The dose is from five to ten drops in water every three or four hours.

It is well worth a trial, and many patients find that they derive much benefit from its use.

PINOL.—This is the pure essential oil distilled from the needles of the *Pinus Pumilio* growing on the Alps just below the line of perpetual snow. It differs from turpentine and ordinary pine oils in being rich in ozone. It has an agreeable aromatic odour, and is a powerful antiseptic. It may be used with advantage to ward off fevers. It should be used freely on the pocket-handkerchief and spray freely about the rooms.

It is an admirable remedy for hay fever, persistent sneezing, coryza, and running from the nose. In the treatment of consumption, especially when the expectoration is profuse and offensive, it is a most valuable remedy.

In cases of chronic bronchitis and winter cough, one or more of the vaporoles may be crushed and placed in the water of the wash bottle of the Vereker Chloride of Ammonium Inhaler. It may also be taken internally on sugar or in the form of the pinol pastilles.

The pinol lanoline soap is excellent for antiseptic purposes.

The uses of the pinol and pinol-eucalyptia dry inhalers have already been described.

PODOPHYLLUM.—The *Podophyllum peltatum*, mandrake, may apple, or hog apple, is a plant which grows abundantly in the United States, chiefly in moist woods and shady situations, and along the banks of rivulets. The stem is usually from eight to ten inches high, and the plant bears a fruit which is known as "wild lemons," and is occasionally eaten. The portion used in medicine is the root, from which is obtained a resin known as podophyllin. This resin is a pale greenish-brown amorphous powder which readily dissolves in spirit. It is a purgative, and is so highly esteemed in its own country that it is known as American mercury or American calomel. It is best administered in the form of the solution (Pr. 51), the dose being two or three drops on sugar every three hours. This solution is useful in the constipation of children. Infants a few months old, especially after a previous attack of diarrhœa, frequently suffer from a confined state of the bowels, the motions being of a clay colour mottled with green, and

PODOPHYLLUM.

often so hard that they crumble to pieces. This condition is accompanied by colic and distension of the belly with wind. The child is naturally fretful, and often cries, especially on going to stool. One or two drops on sugar twice or three times a day will quickly restore the motions to their natural colour, and remove the flatulent distension, so that a marked improvement is soon noticeable in the child's health. The medicine should be administered with sufficient frequency to relieve the bowels once or twice daily.

Falling of the bowel in children, with which the above condition is frequently associated, may be treated in the same way. In adults podophyllin proves of service in many forms of chronic diarrhœa. Its use is indicated when the motions are dark in colour, and when their passage is attended with sharp cutting pains, and more especially when the diarrhœa occurs only in the early morning before breakfast. Almost all forms of morning diarrhœa are curable by this medicine, even when of long standing. One or two drops of the solution three or four times a day will usually answer the purpose.

In some forms of sick headache podophyllin is very useful. It should always be given when the attacks are preceded, accompanied, or followed by diarrhœa with dark-coloured motions. Sometimes, although the motions are dark in colour, the bowels are confined, and even then the podophyllin will do good. One or two drops should be given three or four times a day, and relief will usually be obtained.

In bilious attacks, when there are nausea and giddiness, a bitter taste in the mouth, vomiting of bile, and purging, accompanied by high-coloured urine, we give podophyllin. When instead of these symptoms there are pale and costive motions, dull pain over the liver, loss of appetite, and depression of spirits, it will do no good.

The unpleasant cankery taste in the mouth known as "coppers." from which many people suffer the first thing in the morning, is, when not due to alcoholic excesses, usually amenable to podophyllin.

POMEGRANATE.—(*See* FERN ROOT.)

PRUSSIC ACID, or HYDROCYANIC ACID.—A powerful poison? Quite so, and also a valuable remedy. It is an acid, but is never used for its acid properties. Its action is totally different, and is, in fact. *sui generis.*

Its name is derived from the fact of its having been first obtained from Prussian blue. It is contained in small quantities in the leaves and seeds of some of our commonest fruits, especially in apple-pips.

It is totally unfit for home preparation, and we have consequently no intention of describing the different modes in which it is procured. It is a colourless liquid having a peculiar characteristic odour. For medicinal purposes an extremely dilute solution (two per cent.) is employed. The dose of this is from one to three drops. A tea-spoonful, and probably half that quantity, would prove immediately fatal. The greatest care must of course be taken in dealing with it, and it should never be dispensed except by a person fully alive to the necessity for caution in the measurement of the dose.

In painful diseases of the stomach, such as ulcer and cancer, it often proves beneficial. It not only eases the pain, but frequently stops the attendant vomiting. Palpitation depending upon indigestion is often relieved by this remedy. It is best administered with gentian and soda mixture (Pr. 14).

The tormenting itching of nettle-rash and other skin diseases is often relieved by the application of a prussic acid lotion, made by adding thirty drops of the dilute hydrocyanic acid to a pint of water. This lotion is a POISON, and must not be applied to the broken skin, or over any part where there are sores or cuts, for fear of absorption.

Prussic acid acts energetically as a poison through whatever channel it is introduced into the body; whether it be swallowed, or dropped into the eye, or applied to a fresh wound, or inhaled as vapour, its action is exerted with tremendous energy. The rapidity of its action is shown by a case of accidental poisoning which occurred some years ago. An apothecary's lad was sent from the shop to the cellar for some potash. Almost immediately he was heard by his companions to cry out, in a voice of great alarm, "Hartshorn! hartshorn!" On rushing downstairs they found him reclining on the lower steps grasping the rail, and he had scarcely time to faintly murmur "Prussic acid!" when he expired. On the floor of the cellar was an ounce phial, which had contained prussic acid, but was nearly empty. It is supposed that the unfortunate youth, being ignorant of the active properties of the drug, had taken it out of curiosity, and from the state of the articles in the cellar it was evident that, alarmed at its instantaneous operation, he had tried to get at the ammonia or hartshorn, which he knew to be the antidote, but was overpowered by the tremendous activity of the poison, even before he had had time to undo the coverings of the bottle.

If the patient survive half an hour he is usually safe.

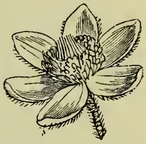
Fortunately, prussic acid is not a cumulative poison—that is, the continued use of small doses frequently repeated is not believed to possess that property recognised in some medicines of accumulating in the body, and then suddenly breaking out with dangerous or fatal violence.

The leaves of the common cherry-laurel (*Prunus lauro-cerasus*) owe their activity to the prussic acid they contain. This well-known plant is a hardy evergreen shrub or small tree, extensively used in gardens and shrubberies for ornamental purposes. It produces early in May elegant spikes of odorous white flowers. The laurel water made by distillation is a dangerous poison, and is so variable in its strength that it is unsuited for administration as a medicinal agent. Several fatal cases have occurred from its injudicious use.

The essential oil of bitter almonds also owes its taste and properties to the presence of prussic acid. It is very variable in strength, but is usually about four times as strong as the officinal prussic acid. It would be considered too powerful and dangerous a preparation to use in medicine, but we nevertheless trust it freely in the hands of our cooks to proportion the dose they consider requisite for flavouring pastry, blanc-mange, etc. The so-called "almond flavour," "spirit of almonds," or "essence of peach kernels," is a mixture of one part of the essential oil with seven of spirit, and even this is often nearly equal in strength to prussic acid. It is sold entirely without restriction, and is so readily procurable that it has recently become quite a favourite agent for suicidal purposes. In five years there were thirty-one registered deaths from oil of bitter almonds, a striking testimony to its popularity. It is only the bitter almond which yields this active principle, the sweet variety being odourless and free from prussic acid.

It may be mentioned that the sweet almond contains a large proportion of oil which, from being purer and less rancid than olive oil, is largely used in perfumery and in the composition of nostrums for the hair. The far-famed "Macassar oil" is said to consist of oil of almonds, coloured red with alkanet-root, and scented with oil of cassia.

PULSATILLA.—The pulsatilla (*Pulsatilla nigricans*), or meadow anemone (*Anemone pratensis*), is a plant which flourishes abundantly on the Continent. By the older writers it was known as the "wind floure," not from any efficacy in the treatment of flatulence, but because it nearly always grows in exposed situations, where it is perpetually agitated by the air. It usually flowers in May, and a second time in August or September.


PASQUE FLOWER.

Pulsatilla appears to have a special affinity for the mucous membranes. It is useful in many forms of dyspepsia or indigestion. It is given when the tongue is thickly coated with a rough fur, and when there is nausea with little vomiting, and an absence of much pain. It will often act beneficially in indigestion caused by fat or rich food, although the most rational treatment is to get rid of the offending substance by means of an emetic. In dyspepsia pulsatilla exerts a greater influence over heartburn that over water-brash.

Pulsatilla does very well in discharges from the ears in children, and often proves curative in deafness the result of a cold, or coming on after measles.

In many diseases of the eyelids it proves very useful. Thus when they discharge freely, and stick together in the morning, pulsatilla is indicated. This drug may also be used for styes, and if given early will often arrest their progress.

Pulsatilla is a drug which is especially adapted for women, and in many of their complaints may be implicitly trusted. Thus it is given in scanty or suppressed menstruation, whites, etc.

Subacute rheumatism, occurring in young delicate people, often yields to this remedy, especially when the knees, ankles, or small joints of the hands and feet are affected. It is also frequently employed in rheumatic gout, being almost curative in the acute forms, and very useful in the chronic.

The whole plant is used in the preparation of the tincture of pulsatilla, the strength of which is one in ten. It is conveniently given in the form of the mixture (Pr. 43), a tea-spoonful every ten minutes for the first hour, and subsequently hourly. In chronic complaints half a table-spoonful may be given every three hours.

PURE TEREBENE.—Pure terebene is an aromatic liquid derived from turpentine. It must not be confounded with the common terebene which is a disinfectant used for flushing out drains.

Pure terebene is a most useful medicine, and is largely employed in the treatment of chronic bronchitis, winter cough, asthma, paroxysmal sneezing, and allied complaints. It is antiseptic and is given with much advantage in the treatment of indigestion, especially when accompanied by distressing flatulence.

In cases of prolonged illness it should be sprayed freely night and morning in the sick-room. This mode of treatment is of much value in cases of advanced consumption.

The dose for internal administration is from three to ten drops on a piece of sugar. For inhalation the pure terebene vaporoles will be found useful.

Many patients in place of the pure terebene prefer equal parts of pure terebene and pinol with a drop or two of eucalyptia. This combination was employed largely and apparently with much benefit during the last epidemic of influenza.

When contagious diseases are rife, the attendants and others brought in contact with the sick should carry a little bottle containing equal parts of pure terebene and pinol. It is largely used by nurses and professional men whose avocations bring them in close contact with the sick.

Care must be taken to see that the preparation supplied is the pure terebene.

QUASSIA, CHIRETTA, CUSPARIA, and CASCARILLA. — The Jamaica quassia (*Picræna excelsa*) is a beautiful, tall, stately tree, somewhat resembling our ash. It is known as the "lofty bitter-wood tree," and it not infrequently attains a height of one hundred feet, its trunk being straight and tapering, and sending off branches towards the top. The wood is white, but by exposure to the air becomes yellowish. It is imported from Jamaica and the other West India islands in billets of various sizes, which are sometimes a foot in diameter and several feet in length. The smaller pieces are often cut up and sold as quassia chips. The wood has no odour, but an intensely bitter taste. It is fatal to nearly all insects, and it has long been known that the infusion

QUASSIA.

is an excellent fly poison, and that it or the tincture is used in the preparation of some of the French fly-papers. Insects never trouble cabinet-work made from this wood, they, it is to be presumed, not being partial to bitters.

Quassia is a simple bitter, and may be used in the same class of cases as gentian or calumba. The infusion is made by steeping sixty grains of quassia chips in half a pint of cold water for an hour, and then straining. The dose is from two to three table-spoonfuls. When it is given to improve the appetite it, like other bitters, must be given shortly before meals; it is of no use taking it after. Quassia may be given with iron, as they do not turn black when mixed. It is one of the ingredients of the iron and quassia mixture (Pr. 2). Sometimes the infusion is employed in the case of children, as an injection for the destruction of the little thread-worms which so frequently infest the lower bowel. It may succeed when given by the mouth, but the method which we have indicated will be found much more effectual.

Chiretta (*Ophelia chirata*), or bitter plant of the Kirâtas, a mountain tribe in the north of India, has long been esteemed by the Hindoos, and is as universally employed throughout the Bengal Presidency as gentian is in Europe. The entire plant is used medicinally, and is commonly administered in the form of an infusion, prepared by steeping a quarter of an ounce of the plant cut small in half a pint of warm water for half an hour, and then straining. The dose is two table-spoonfuls.

Cusparia (*Galipea cusparia*) is a tree varying much in size, and is a native of South America. Its bark is known as "angostura bark." When first imported it was occasionally mixed with the bark of the nux vomica tree, which from that circumstance is often called "false angostura." The marks of distinction between the two barks were soon recognised, but not before several deaths had occurred from the unfortunate accident. There is little danger of the mistake being repeated, but should there be any doubt on the subject it will be at once removed by chewing a fragment, for cusparia bark has a disagreeably aromatic flavour, whilst that of the nux vomica has a pure and intensely bitter taste. The infusion of cusparia is made by steeping half an ounce of the bark in coarse powder in half a pint of hot water for two hours, and then straining. The dose is two table-spoonfuls or more. It differs from chiretta and gentian chiefly in the fact of its being more aromatic.

The cascarilla (*Croton elutria*) is a member of the Spurgewort family, the natural order which yields us croton and castor oils. It is a shrub or small tree, a native of the Bahamas, and the thickets of Jamaica, and the other West India islands. The bark, the only part used in medicine, is found in quills from two to three inches long, which have a dull brown colour, a warm, bitter taste, and emit a fragrant odour when burned. The powdered bark is the essential ingredient of the fumigating pastilles. It may be given internally in powder in from ten to thirty-grain doses, either with carbonate of soda or in milk. An infusion is made in the proportion of one ounce of bark to half a pint of boiling water, the dose being as usual—two tablespoonfuls. It may be described as a slight stimulating tonic, and it is chiefly employed in dyspepsia and other allied complaints.

RHUBARB.—The characters and properties of rhubarb are so well known that it may appear almost superfluous even to enumerate them. The rhubarb used for medicinal purposes is obtained from Thibet and Chinese Tartary. The root is dug up, cleaned, peeled, and cut into pieces, which are bored with a hole through the centre, and are then hung up in the sun to dry. It is imported from Canton, and is brought overland by way of Moscow. This rhubarb is generally known as "Turkey rhubarb," but the true Turkey rhubarb is a thing of the past, for as the rhubarb of the Levant disappeared from trade, that of Russia took not only its place, but its designation. Rhubarb has been cultivated for medicinal purposes at Banbury, in Oxfordshire, for nearly a century.

There are several preparations of rhubarb largely used for their purgative properties.

The "infusion of rhubarb" is made by infusing a quarter of an ounce of rhubarb root, in thin slices, in ten fluid ounces of boiling water for an hour, and then straining. The dose of this horrible preparation is about a wine-glassful.

Compound rhubarb pills are made as follows:—Mix 3 ounces of powdered rhubarb, 2¼ ounces of Socotrine aloes in powder, and 1½ ounces each of powdered myrrh and hard soap, with 1½ fluid drachms of oil of peppermint; then add four ounces of treacle, and beat the whole into a uniform mass, after which it is to be divided into pills, each containing about five grains. One or two may be taken for a dose.

Gregory's, or the compound rhubarb powder, is a sifted mixture of two ounces of powdered rhubarb root, six ounces of light magnesia, and one ounce of powdered ginger. The dose for a child is from fifteen to twenty grains.

Rhubarb, like many other drugs, has a double action, for in large doses it acts as a purgative, whilst in small doses it is an astringent, and confines the bowels. It is used largely for children—why, it is difficult to say, for nine times out of ten it does infinitely more harm than good. The horrors of the Inquisition, the greatest enormities charged even against the vivisectors, sink into insignificance before the horrible cruelties which are constantly inflicted on children by the forcible administration of rhubarb and other equally nauseous drugs. If the bowels are confined, it generally arises from some error in diet, or want of attention to the general principles of health, and the temporary difficulty is often readily removed by giving the child a little fresh fruit or a few figs.

ROCHELLE SALT.—(*See* EPSOM SALTS.)

SACCHARIN.—Saccharin rejoices in a number of names, for it is called indifferently "glusidum," "gluside," "glucusimide," and "benzolsulphonicimide."

It is a derivative of toluene obtained from coal tar. It is a light, white, minutely crystalline powder, possessing an intensely sweet taste even in very dilute solutions. It is slightly soluble in cold water, but more freely so in boiling water and glycerine.

Its sweetening power has been variously estimated as from one hundred to three hundred times that of sugar. It is quite easy to detect by the taste alone a grain in a gallon.

It is not poisonous, and it is probable that even large doses do no harm. It is antiseptic, and is eliminated unchanged by the urine, to which it imparts a sweet taste.

It is of the greatest value to diabetic patients who are debarred from the use of sugar in any form.

For practical purposes pure soluble saccharin is more useful than saccharin itself. Soluble saccharin consists of about 90 per cent. saccharin combined with soda. The combination is much more readily soluble than the saccharin itself.

The most convenient form in which to use saccharin for sweetening purposes is the half grain soluble saccharin tabloid. The mistake most people make is to use too much saccharin. They forget how wonderfully potent it is. A single tabloid is quite sufficient to sweeten a cup of tea or coffee.

To make a sweetening solution free from sugar one drachm of saccharin should be mixed with a pound of glycerine, and placed in the oven for an hour. A tea-spoonful of this may be employed for sweetening fruit, or for mixing with aërated waters.

Some time ago it was asserted that saccharin exerted an injurious effect on the animal economy, but there seems to have been little or no foundation for this statement.

Saccharin is undoubtedly a boon not only to the diabetic, but to the dyspeptic and obese.

SAL AMMONIAC.—This salt rejoices in a multiplicity of names. In addition to sal ammoniac it is known as chloride of ammonium, muriate of ammonia, and sometimes as hydrochlorate of ammonia.

It was well known to the ancients, and its most popular name is said to be derived from Ammonea, a district in Libya, where the oracle of Jupiter Ammon was situated. In Egypt sal ammoniac was and is still obtained by burning camel's dung.

In this country, however, it is derived from a more abundant source, the refuse products formed in the manufacture of coal gas. This "gas liquor" is an offensive, tarry, and strongly ammoniacal liquid. On the addition of hydrochloric acid there is an abundant evolution of a mixture of different gases, and on concentrating the fluid impure crystals of sal ammoniac are obtained. These are separated, and, after being roasted to expel the tarry matter, are sublimed in an iron pot furnished with a dome-shaped cover, upon the inner surface of which the salt is deposited in a hard thick cake.

It is usually sold in colourless, inodorous, fibrous masses which are pieces of this hemispherical cake. It is tough and extremely difficult to powder, but dissolves readily in either hot or cold water. The rusty-looking stain often noticed on the outer surface of pieces of this salt is derived from the iron pots used in its preparation.

Sal ammoniac is a valuable remedy for all forms of neuralgia, especially for neuralgia of the face. In the treatment of this complaint it is to be reckoned only second to phosphorus, of the beneficial effects of which we have already spoken.

In pain in the muscles of the side, in neuralgia of the side, and the mild forms of sciatica, it is extremely useful. In these cases it should always be given in large quantities. Doses of less than half a drachm usually prove useless, and sufferers who have taken it in smaller quantities without avail will do well to give it a second trial under more favourable auspices. The only objection that can be urged against its use is that it is extremely nasty. It may be conveniently taken in the form of the following mixture, every two table-spoonfuls of which contain half a drachm of the salt:—Sal ammoniac half an ounce, chloric ether one and a half tea-spoonfuls, liquid extract of liquorice half an ounce, water eight ounces. Two table-spoonfuls should be taken every four hours. It can be obtained in the form of tabloids containing three, five, and ten grains in each.

Fortunately, sal ammoniac acts quickly. If the first few doses fail to relieve the pain, it is useless to continue taking it, and it may be concluded that the form of complaint is not one over which the drug will exert any beneficial influence.

In catarrh, chronic bronchitis, and winter cough, the sal ammoniac should be used in the form of fumes, generated in what is called a "Vereker Chloride of Ammonium Inhaler." This little apparatus can be obtained from any chemist, and is most useful.

SALICIN and THE WILLOW.—As many as sixty-four indigenous species of willow have been recognised by botanists, but of these a few only are useful for medicinal purposes.

The "Bedford willow," the "crack willow," and the "common white willow" have already earned their laurels as curative agents.

At present we are unable to say positively which of these is the most energetic in its action, but a good practical rule is to select those barks which possess the greatest bitterness combined with astringency.

WILLOW.

Willow bark varies somewhat in its characters according to the species from which it is obtained, but it is usually thin and flexible, and readily rolls up into quills. It has a slight odour, but a powerful bitter and astringent taste.

It has in many parts of the country long enjoyed a reputation for the cure of ague, and it has been largely used as a substitute for quinine. Its activity depends chiefly on the presence of a substance known as "salicin."

This salicin may be obtained in little white, silky needles or scales, which are soluble in water, and more so in hot water than in cold.

It is now largely employed in cases of rheumatic fever or acute rheumatism, and very favourable results have followed its administration. It is the remedy upon which the greatest reliance is placed in the treatment of this terrible disease. It should be given in thirty-grain doses every two hours, or, in bad cases, every hour—smaller doses are of little avail. Pr. 12 should be used.

The same method of treatment may be adopted in ague when quinine is not procurable. Tea-spoonful doses of this mixture are sometimes used in the treatment of singing in the ears.

Salicylate of soda is most useful in the treatment of acute rheumatism or rheumatic fever, and has to some extent superseded salicin in this complaint. It is usually prescribed in the form of five-grain tabloids, three of which in very severe cases may be given every four hours. The relief is often most marked, the patient being relieved of pain, and passing speedily from a condition of intense suffering to one of comparative comfort.

SALOL.—Salol is a salicylate of phenol and may be said to combine the properties of carbolic acid and salicylic acid. It is usually sold in small white crystals, having the agreeable odour of winter green. It is tasteless and is insoluble in water.

Its chief reputation is in the treatment of rheumatism, but it is also antiseptic and has been found of value in the treatment of enteric fever, and cholera. It may be employed with advantage in summer or autumnal diarrhœa.

It is most conveniently administered in the form of the five-grain tabloids. In acute rheumatism one may be given every three hours, whilst in the more chronic forms three tabloids should be administered three times a day.

It is the active ingredient in "salodent," the aromatic liquid dentifrice and antiseptic mouth wash.

SAL VOLATILE.—There are probably few medicines more commonly used for slight ailments than sal volatile, or, as it is called in scientific language, aromatic spirit of ammonia. This preparation is not a simple drug, but a mixture of several substances.

As probably not one person in fifty who uses this popular preparation has the slightest idea what it is composed of, we will enumerate its ingredients. It is a mixture of carbonate of ammonia, strong solution of ammonia, volatile oil of nutmeg, oil of lemon, rectified spirit, and water. The spirit is by far the largest constituent, and an habitual sal volatile taker is every bit as much a spirit-drinker as the man who "fuddles" himself with gin-and-water over the bar of a public-house.

Sal volatile is undoubtedly a valuable diffusible stimulant, but there are unfortunately hundreds of people who employ it with such injudicious frequency, and upon every trivial occasion, that its use has been greatly abused. A physician of the last century narrates the following case illustrative of the ill effects resulting from the long-continued use of one of its constituents, carbonate of ammonia:—

"I had lately under my care," he observes, "a gentleman of fortune and family, who so habituated himself to the use of vast quantities of volatile salts, that at length he could eat them in a very astonishing manner, as other people eat sugar and carraway seeds. The consequence was that he brought on a hectic fever, vast bleedings from the intestines, nose, and gums; every one of his teeth dropped out, and he could eat nothing solid; he wasted vastly in his flesh, and his muscles became as soft and flabby as those of a new-born infant; and he broke out all over his body in pustules. He was at last persuaded to leave off this pernicious custom; but he had so effectually ruined his constitution that though he rubbed on in a miserable manner for several months, he died, and in the highest degree of wasting. And I am persuaded he would have died much sooner had he not constantly drank very freely of the most fine and generous wines, and daily used large quantities of asses' milk and anti-scorbutic juices, acidulated with juice of lime."

Sal volatile and other preparations of ammonia or hartshorn are largely used for fainting, hysteria, nervous headache, spasms, and flatulence. The dose of the sal volatile is from twenty drops to half a tea-spoonful in a wine-glass of water.

In cases of fainting it is customary to place a bottle of sal volatile or smelling-salts to the nose, for the purpose of assisting the patient's restoration to consciousness. In applying preparations containing ammonia to the nostrils of a person in a state of insensibility, we must be careful to avoid using our remedy too energetically. We should always employ it with caution, for if used injudiciously serious or even fatal consequences may ensue. It is a good plan to ascertain by our own sensations the distance at which the bottle should be held from the nose. A few years ago a French physician, who suffered from epileptic fits, was found by his servant in a state of insensibility. The devoted attendant, in order to arouse his master, applied to his nose a handkerchief moistened with ammonia, and continued the application with such unwearied but destructive benevolence, that he not only restored him to consciousness, but excited an attack of bronchitis which proved fatal on the third day.

Ammonia is largely used as an external application in the form of hartshorn and oil. It is employed somewhat indiscriminately for the relief of rheumatic and neuralgic pains, lumbago, sore throat, sprains, and bruises.

A very popular liniment is the old-fashioned hartshorn and oil. It is prepared as follows:—

Solution of ammonia, one fluid ounce; olive oil, three fluid ounces; mix and shake well together. It should be made in a wide-mouthed bottle, as a difficulty is sometimes experienced in getting it to flow out when the neck is narrow.

SANTONIN.—(*See* FERN ROOT, SANTONIN, ETC.)

SARSAPARILLA.—Sarsaparilla was at one time regarded almost as a "cure-all," and administered in almost all chronic diseases. As a proof of its efficacy, it was stated by its advocates that patients who commenced taking it often continued to do so for months or years. This we should regard rather as a proof that it was inert, for if it were possessed of active properties it would surely either have killed or cured them long before. The fact is that sarsaparilla was seldom given alone, but was used as a vehicle for the administration of mercury, iodide of potassium, and other powerful and efficient drugs, so that it often obtained credit which it by no means deserved.

We believe that sarsaparilla itself is utterly without effect upon the economy, and that its reputation as a "blood purifier," whatever that may mean, is all rubbish. There is one thing to be said in its favour

—if it does no good, it can do no harm. If there is anyone who still retains a latent belief in its virtues, he may indulge himself with perfect safety, with the full assurance that he will not suffer in any way, unless it be in pocket.

SARSAPARILLA.

The decoction of sarsaparilla is made by steeping two and a half ounces of sarsaparilla cut into small pieces in a pint and a half of boiling water, and gradually evaporating it down to a pint.

The compound decoction of sarsaparilla is more complex in composition. Each pint contains two and a half ounces of Jamaica sarsaparilla, a quarter of an ounce of sassafras root, dried liquorice root, and guiacum wood turnings, and an eighth of an ounce of mezereon bark.

SENEGA and SQUILLS.—These drugs are employed chiefly to loosen the phlegm in cases of bronchitis.

Senega is the root of a plant growing abundantly in Kentucky, Ohio, and Tennessee, and was originally used by the Senegaroo Indians as an antidote for the bite of the rattlesnake. It has a sweetish and somewhat acrid taste, and increases the flow of the saliva. It is usually used in the form of an infusion, made by pouring half a pint of boiling water over half an ounce of senega root in coarse powder, letting it stand for an hour, and then straining. The dose is from two to three table-spoonfuls. Not only does it loosen the phlegm, but it increases the perspiration. It is seldom given alone, but is combined with carbonate of ammonia, ipecacuanha wine, and other expectorants.

The squill is a thoroughly old-fashioned medicine. It was employed by the ancient Greeks, and is said to have been worshipped by the Egyptians. It is to be feared that nowadays its reputation is somewhat on the wane. It grows abundantly on the sandy shores of France, Spain, Portugal, and Italy. The bulb, which is something like a large onion, is the portion used for medicinal purposes. We usually obtain it in dried slices, yellowish-white in colour, bitter, translucent, and somewhat horny. There are several preparations of squills, of which the tincture and syrup are the most frequently employed. The former is given in half tea-spoonful, and the latter in tea-spoonful doses, usually with other cough medicines. The ipecacuanha and squill mixture (Pr. 20) is a useful combination. The dose for an adult is two table-spoonfuls every four hours.

In larger doses, squill produces vomiting and diarrhœa. It is seldom used as an emetic, on account of the depression it produces.

SENNA.—The plants which furnish the leaves known to us by the name of senna are low shrubs growing wild in Syria, Arabia, and Upper Egypt, whence the drug is imported into Europe. There has always been some little difficulty about the plants yielding this drug, which has arisen from the fact that different plants have been called by the same name, and different names have been applied to the same plant, a practice which is apt to lead to confusion. If we examine an ordinary specimen of senna we shall find that the leaves are not all alike, but that they vary considerably both in shape and size. Some are long and narrow and sharp-pointed, others are short and broad and blunt at the apex, whilst in addition there are all kinds of intermediate varieties. They have a faint, sickly odour, and the taste is at first sweetish, but afterwards nauseous and bitter.

SENNA PLANT.

Senna has long been famed, even proverbially, for its purgative properties; thus Shakespeare says in Macbeth:—

> "What rhubarb, senna, or what purgative drug
> Would scour these English hence?"

It is generally used either as an infusion or in the form of the ever-popular "black draught."

The infusion is made by pouring half a pint of hot water on an ounce of senna and thirty grains of sliced ginger, letting it stand for an hour in a covered vessel, and then straining.

The black draught is prepared as follows:—Dissolve four ounces of Epsom salts and half an ounce of extract of liquorice in fourteen fluid ounces of infusion of senna with the aid of gentle heat, then add two and a half fluid ounces of tincture of senna and ten fluid drachms of compound tincture of cardamoms, and, finally, a sufficient quantity of infusion of senna to make it up to a pint.

The dose of either of these preparations is from two to three tablespoonfuls.

Senna is apt to gripe unless given in combination with salines or some aromatic substance.

The confection of senna is a useful laxative in cases of habitual constipation. It contains, in addition to its essential ingredient, figs, prunes, tamarinds, cassia pulp, extract of liquorice, coriander fruit, and refined sugar. Its efficacy may be increased by the addition of a little sublimed sulphur, as in the confection of sulphur and senna (Pr. 59).

Another preparation of senna, an excellent purgative for children, is the *compound liquorice powder*—powdered senna leaves, two ounces; liquorice root in fine powder, two ounces; fennel fruit, one ounce; sublimed sulphur, one ounce: and refined sugar, six ounces. It is essential that all the ingredients should be finely powdered: they should be thoroughly mixed, and then sifted. The dose for adults is from thirty to sixty grains stirred in a little water or milk, and for a child four years old, ten grains.

SPANISH FLY.—(*See* CANTHARIDES.)

STAVESACRE.—This is a drug which was largely used by the ancient Greeks.

The stavesacre, or palmated larkspur (*Delphinium staphisagria*), is a native of Provence, and many other parts of the South of Europe.

It is a handsome plant, attaining a height of one or two feet, and bearing beautiful blue or purplish flowers supported on long footstalks. Our climate is too cold to admit of its cultivation in the open air in this country.

The seeds have the reputation of being very poisonous. They are not administered internally, but are made into an ointment which has the property, by no means to be despised, of destroying pediculi or lice.

The best and cheapest method of making this preparation is to bruise two drachms of the seeds and throw them into an ounce of melted lard, stirring them well together. After an interval the hot mixture must be strained through linen, and the ointment so obtained will be found efficacious in destroying the disagreeable visitors to which we have referred.

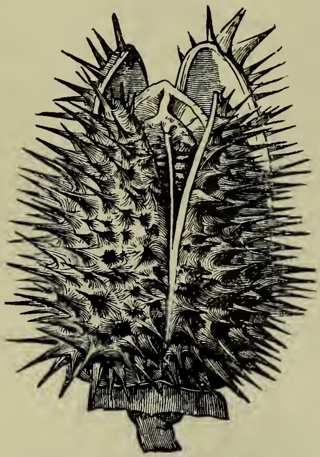
STEEL WINE.—(*See* IRON.)

STRAMONIUM.—The thorn apple (*Datura stramonium*) is an annual plant originally imported from America, where it is known as the "apple of Peru," "devil's apple," and "Jamestown weed."

It is frequently found on dunghills, in waste places, and near gardens in the south of England, and particularly in the environs of London. The flowers are large, white, or occasionally light purple, and grow singly from the side of the stem opposite the origin of the leaves. The plant has a nauseous smell, is handsome only when in flower, and consequently is not a general favourite.

The action of the stramonium is similar to that of belladonna.

The dried leaves are frequently used either in the pipe, or in a cigarette, for the relief of spasmodic asthma. The smoke must be drawn well into the lungs, although it sometimes excites a good deal of cough. Its beneficial effects are more manifest when it is resorted to at the very commencement of the attack, before the paroxysm is fully developed. Dryness of the throat and mouth are to be regarded as indications that too large a quantity is being taken.


FRUIT OF THE STRAMONIUM.

An allied species, *Datura tatula*, is also used in the treatment of asthma. It may be smoked either in a pipe or cigarette.

Himrod's Powder and the Green Mountain, Hockin's and Bliss' Cures for Asthma probably consist of powdered stramonium leaves, lobelia and black tea saturated with a solution of nitre and then dried. They may be closely imitated by taking two ounces each of stramonium, lobelia, and black tea, and after finely powdering them, saturating them with a solution of two ounces of nitre in two ounces of water. When well dried the powder burns, giving off dense fumes, which often speedily cut short an asthmatic attack.

A useful fuming inhalation may be made by mixing together two parts of powdered olebanum and powdered benzoin. When put on a hot shovel it gives off fumes and speedily fills the room with an aromatic odour.

STRYCHNINE.—(*See* NUX VOMICA.)

SUGAR OF LEAD.—(*See* LEAD.)

SULPHATE OF ZINC and OXIDE OF ZINC.—There are only two preparations of zinc administered internally for medicinal purposes. These are the sulphate of zinc, or white vitriol, and the oxide of zinc.

The oxide of zinc was formerly known by several names which are more remarkable for their fantastic character than for conveying any very definite information respecting the substance to which they were applied. Amongst these the most generally known are "tutty," a word, apparently, of Oriental origin; "lana philosophica," or philosopher's wool, and flowers or calx of zinc. These terms are frequently met with in old works on medicine and chemistry, but their use is now for practical purposes discarded.

The process employed in the preparation of oxide of zinc is somewhat similar to that used in making quicklime. Carbonate of zinc is heated to a dull red heat in a crucible until all the carbonic acid gas is driven off—in other words, until it is completely slaked. The success of the operation is tested by dropping a little of the oxide of zinc into some oil of vitriol and water, when, if any of the carbonate remain, its existence will be at once indicated by the effervescence caused by the escape of the gas. The preparation should be kept in a well-stoppered bottle, as, like lime and magnesia, it absorbs carbonic acid from the air, and becomes reconverted into a carbonate. Oxide of zinc is a soft, white, tasteless, inodorous powder, insoluble in water.

It is used occasionally for hysteria, epileptic fits, St. Vitus's dance, neuralgia, whooping cough, and other diseases supposed to be of nervous origin; but there are other remedies on which we should place greater reliance in the treatment of these complaints.

There is one condition, however, in which its use is of considerable value. Its power of arresting the profuse night sweats, which so frequently reduce the little remaining strength of consumptives, is unquestionable. It should be given every night at bed-time in five-grain doses. It is conveniently administered in the form of the oxide of zinc pills (Pr. 66), each of which contains two and a half grains; but it may be given, if thought desirable, as a powder, mixed with a little white sugar. Two are to be taken every night at bed-time when the perspiration is troublesome.

Sulphate of zinc, or white vitriol, is found native at Holywell in Flintshire and in a few other places. It is usually prepared by dissolving zinc in dilute oil of vitriol, and then evaporating down the solution so obtained until it crystallises. Commercial zinc is usually contaminated by traces of iron and lead, a circumstance which renders the purification of the salt advisable. It may readily be freed from its impurities by immersing in the solution a strip of zinc, on which the other metals are soon deposited.

White vitriol cannot be better described than by saying that in its characters it closely resembles Epsom salts, the crystalline form of the two bodies being identical. It possesses a metallic styptic taste.

Sulphate of zinc is used as an emetic, particularly in cases of poisoning. It is speedy in its action, usually emptying the stomach in a single evacuation, a point of considerable importance in cases where a short delay may make the difference between life and death. Moreover, it produces but little prostration or nausea, another advantage which, particularly with attempted suicides, should not be altogether disregarded. The dose of sulphate of zinc as an emetic is from thirty to sixty grains, but in cases of emergency a tea-spoonful may be thrown into a little water, hot by preference, and taken immediately it has dissolved. Large draughts of hot water, by distending the stomach, promote vomiting. The emetic draught (Pr. 27) consists chiefly of sulphate of zinc.

White vitriol is often useful in cholera or St. Vitus's dance, and it succeeds best when it is given in doses sufficiently large to make the patient feel sick, or even actually to excite vomiting, once or twice a day. The system soon becomes accustomed to the administration of this remedy, and to maintain its influence over the complaint the dose must be rapidly increased. It is well in the case of children to commence with half a grain three times a day, and to increase it by degrees to two grains every two hours. Sometimes such an amount of tolerance is established that as much as ten grains have to be given every two hours before the slightest feeling of sickness is produced. It may be administered in a little water or in any of the ordinary beverages. A striking improvement is often effected by the drug when given in this way. The occurrence of pain at the pit of the stomach, accompanied by loss of appetite, is to be regarded as an indication that the dose is too large, and it should be discontinued for a time.

There are several other preparations used for external application in addition to those already mentioned.

The oxide of zinc is slightly astringent in its properties, and when mixed with starch is often used as a "dusting powder" (Pr. 80). It is applied to sores and abrasions of all kinds, and frequently to the damp oozing surface left when many skin diseases have imperfectly healed.

Native carbonate of zinc, or "calamine," which is found in great abundance in several parts of England, is sometimes preferred to the oxide of zinc in making the "dusting powder," but there is no advantage in its substitution.

Oxide of zinc enters into the composition of zinc ointment, an ointment the uses of which are legion. It is largely used spread on lint as a dressing in many affections in which the skin is broken, such as ulcers and burns.

Zinc ointment is made as follows:—Take an ounce of lard, melt it, add eight grains of benzoin, then strain it, and when cold mix thoroughly with it eighty grains of oxide of zinc. The object of the benzoin, which is a balsam, is to preserve the ointment. Zinc ointment made with ordinary lard soon becomes rancid, and if applied in this state to a raw surface acts as an irritant, and would probably do more harm than good.

Chloride of zinc is a white, semi-transparent, very deliquescent salt, having powerful and penetrating caustic properties. It is made by dissolving zinc in hydrochloric acid, the resulting product being submitted to a process of purification. It is usually met with in colourless opaque tablets, or rods, which are almost entirely soluble in water. It is used for the removal of tumours, and for the destruction of mothers' marks, large warts, and rapidly spreading skin affections. It is a powerful deodorising agent, and is largely used for this purpose.

Burnett's disinfecting and antiseptic fluid is a solution of chloride of zinc, containing 200 grains in the ounce. It is diluted before being used, one pint being added to five gallons of water. It should be remembered that it is a powerful poison when taken internally, and that several fatal accidents have occurred through its administration. A young woman who swallowed an ounce of Burnett's solution died in four hours, in the greatest agony.

SULPHIDE OF CALCIUM, or SULPHURATED LIME.—This is the active constituent of some of our most valuable mineral waters. There are several different methods of preparing it, but one of the best is by mixing equal portions of clean finely-powdered oyster-shells and flowers of sulphur, and heating them to a white heat in a crucible for ten minutes. It is often asked where all the old oyster-shells go to. This is one of their uses, although we can hardly venture to adduce it as a solution to this often-enunciated problem.

When used in the form of baths sulphide of calcium exerts a beneficial influence on old long-standing skin diseases. Care should be taken not to employ them so long as there is any inflammation or rawness of the skin; but when this has subsided they may be employed with the greatest advantage. The use of these baths at a high temperature will often relieve chronic rheumatism and gout, and will restore suppleness to joints which have been distorted and stiffened by these complaints, or by rheumatic gout.

There are several forms in which sulphide of calcium may be given internally. A solution may be made of nearly the same strength as the Harrogate waters by dissolving one grain in half a pint of water. The dose of this is for a child one tea-spoonful every hour, and for an adult twice as much. The disadvantage of this preparation is that it rapidly decomposes, so that in order to obtain any beneficial effect it is essential that the solution should be freshly prepared daily. This is often inconvenient, and as the drug can be given with equal advantage as a pill or in powder it is usually better to employ one of those formulæ (Prs. 68 and 78). The tabloids contain a tenth of a grain in each, and one should be taken every four hours.

Undoubtedly the most remarkable property of these preparations is the influence which they exert over the formation of matter. When a part is inflamed, and it is feared that matter will form, our drug will not only avert this undesirable consummation, but will frequently speedily reduce the inflammation.

Should there be already a discharge from a boil or abscess the matter will, by the administration of this remedy, be rendered thicker and healthier, and the healing process will be promoted.

In all kinds of abscesses, or threatening abscesses, the sulphide of calcium pilules should be given.

For boils and carbuncles this drug is invaluable. No time should be lost in commencing treatment by a tabloid every hour. The sulphide of calcium lessens the inflammation, breaks down the hard core of the boil, and in this manner greatly shortens the duration of the complaint. In addition to this it in most cases prevents the formation of other boils and carbuncles, and does much to remove the accompanying debility, and improve the general condition of the health.

Children occasionally suffer from lumps in the neck, which after a time burst, and discharge a little thin watery matter. Sulphide of calcium will do good in these cases. One of the tabloids should be taken every three hours. Sometimes the complaint is of long duration, the discharge going on week after week, and month after month. In such chronic cases the medicine may have to be taken three times a day without intermission for some weeks before any marked improvement is noticeable, but the ultimate result is nearly always satisfactory.

SULPHONAL.—This is a sleep-producing substance, the full name of which is diethylsulphondimethylmethane. It is prepared by a complex chemical substance which it is unnecessary to describe.

It is colourless and odourless and is almost insoluble in cold water, although it dissolves readily in hot brandy and water.

It usually produces calm, undisturbed sleep unattended with dreams. As a rule it is not followed by headache, loss of appetite, or constipation, and in this respect it has a decided advantage over opium.

It is essentially slow in its action, and should be given at least an hour before retiring to rest. It can be obtained in tabloids containing five grains in each, the maximum dose for an adult being three tabloids. Some people take it in a little beef-tea, whilst others take it dissolved in hot brandy and water.

Although it rarely produces any disagreeable effect in the morning, it must be remembered that all hypnotics are more or less injurious, and that the habit of taking them is very easily acquired. The sulphonal "habit," like the opium "habit," is a difficult one to shake off, and sulphonal, like all drugs of its class, should be employed with caution and regarded with suspicion.

SULPHUR, or BRIMSTONE.—Native or virgin sulphur is found chiefly in volcanic regions, our principal supply being obtained from Sicily. It is freed from its impurities by a process of "sublimation," that is to say, it is heated, and the vapour is allowed to condense in the form of a light powder on the walls and floor of a large room or chamber into which it passes. This powder is known as sublimed sulphur, or flowers of sulphur, and is the form most used for medicinal purposes.

The common "stick sulphur," or "brimstone," usually contains impurities which render it unfit for internal administration.

There is another form of sulphur known as "milk of sulphur," or "precipitated sulphur," which is obtained by throwing it down, or precipitating it by means of an acid, from a mixture of lime and sulphur. It is not uncommonly largely contaminated by the lime used in its preparation, a circumstance which would greatly impair its activity.

It is necessary to be acquainted with the characters and appearance of the two forms of sulphur used in medicine, so that they may not be confounded with other drugs, and in order that their freedom from impurities or adulteration may be ascertained. Sublimed sulphur is a bright yellow powder, somewhat gritty to the touch, destitute of smell or taste—a great advantage to the medicine. It will not dissolve in water, and has consequently to be taken in the solid form. If thrown on the fire it burns with a blue flame, giving rise to a powerful irritating odour, familiar enough to everyone who remembers the old sulphur matches. The milk of sulphur is a pale yellow powder much lighter in colour than the other form. It is free from grittiness, and burns with the suffocating odour already mentioned.

Sulphur is taken internally chiefly as a laxative. It is useful in piles, the motions which follow its administration being of a soft yielding nature, an advantage which every sufferer from this distressing complaint will readily appreciate. It may also be used with a similar view, and with equal advantage, in falling of the bowel, and in fissure in the neighbourhood of the passage.

Many people take sulphur in the form of "brimstone and treacle," every spring and autumn, probably on the theory enunciated by Mr. Squeers, that it "purifies the blood." It is a custom in favour of which little can be urged, and it is decidedly better to abstain from the use of medicine in any form unless there is a real necessity for taking it. The habitual use of sulphur is apt to impair the digestion and spoil the appetite, a fact which did not escape the acute observation of the talented mistress of Dotheboys' Hall.

There are several ways in which sulphur may be taken, the old-fashioned and ever popular "brimstone and treacle," or "flowers of sulphur and molasses," being in all probability one of the best, the treacle aiding the laxative power of the sulphur. The following is another and equally efficacious form in which it may be given:—

Confection of Sulphur.—Flowers of sulphur, four ounces; cream of tartar, in powder, one ounce; syrup of orange-peel, four ounces. These ingredients, when mixed, form an electuary or conserve, one or two table-spoonfuls of which may be taken once or twice a day, or oftener, if the bowels are confined and the motions hard.

Sulphur is used largely in the form of an ointment for the cure of the itch and other skin diseases, it proving in many of these cases a most valuable remedy. The ordinary yellow sulphur ointment is made by rubbing up one part of flowers of sulphur in four parts of benzoated lard. Ordinary lard may be used for the same purpose, but the ointment so made is apt to become rancid, and may irritate the skin, and perhaps do more harm than good.

The little black and red spots which so frequently disfigure the complexion and mar the physical beauty of young growing women are best removed by the following lotion:—

Sulphur Lotion.—Flowers of sulphur, a tea-spoonful; glycerine, two table-spoonfuls; rose water, half a pint—mix. This is to be applied to the face on an old and soft towel, or pocket-handkerchief, two or three times a day. It is not to be taken internally.

TAR and CREASOTE.—There are two different kinds of tar, wood tar and coal-tar, the former only being used in medicine. Tar is prepared by the destructive distillation of Scotch fir, the process being carried on largely in Stockholm, and also in some parts of America. The method pursued is almost identical with that practised in this country for making charcoal, the essential difference being that in the former case a special provision is made for the collection of the tar which exudes from the smouldering wood.

It would be superfluous to enter into any detailed description of the characters of tar; it is so frequently used for purposes of a domestic or semi-domestic nature that it is familiar enough to everybody.

About a century ago the virtues of tar water were strongly advocated by Bishop Berkeley, in a work entitled "Siris; a Chain of Philosophical Reflections and Inquiries concerning the Virtues of Tar Water, and divers other Subjects connected together and arising one from the other." This curious work, which may be regarded as a dissertation on all subjects, from tar water to the Holy Trinity, seems to have been a great success, for it passed through several editions in a very short time.

The learned and reverend writer appears to have had considerable personal experience of the use of tar, for he says:—"I esteem my having taken this medicine as the greatest of all temporal blessings, and am convinced that under Providence I owe my life to it." He gives the following directions for making the tar water:—"Pour a gallon of cold water on a quart of tar and stir and mix them thoroughly with a ladle or flat stick for the space of three or four minutes, after which the vessel must stand eight-and-forty hours, that the tar may have time to subside, when the clear water is to be poured off and kept covered for use; no more being made from the same tar, which may still serve for common purposes." He directs that half a pint should be taken night and morning on an empty stomach. It may, he says, be made more palatable by mixing with each glass a drop of oil of nutmeg, or a tea-spoonful of mountain wine.

Bishop Berkeley speaks of tar water as being a cure for "foulness of blood, ulceration of the bowels, consumptive coughs, pleurisy, pneumonia, erysipelas, asthma, indigestion, cachectic and hysteric cases, gravel, dropsy, and all inflammations." In fact, about a century ago tar water was for a time regarded as a universal panacea.

When the tar water mania was at its height, an ingenious hoax was penetrated on the Royal Society. It appears that a sailor who had broken his leg was advised to communicate to that learned body a report of his case. The account he gave was that, having fallen from the top of the mast and fractured his leg, he had dressed it with nothing but tar and oakum, and yet in three days he was able to walk as well as before the accident. The story at first sight appeared quite incredible, as no such efficacious qualities were known in tar, and still less in oakum; nor was a poor sailor to be credited, on his own bare assertion, of so wonderful a cure. The Society very reasonably demanded a fuller relation, and the corroboration of the evidence. Many doubted whether the leg had been really broken. That part of the story had been amply verified. Still, it was difficult to believe that the man had made use of no other application than tar and oakum; and how *they* could cure a broken leg in three days, even if they could cure it at all, was a matter of the utmost wonder. Several letters passed between the Society and the patient, who persevered in the most solemn asseverations of having used no other remedies, and it appeared beyond a doubt that the man spoke the truth. But charming was the plain, honest simplicity of the sailor: in a postscript to his last letter he added the words: "I forgot to tell your honours that the leg was a wooden one."

After a time the use of tar in the treatment of diseases was, in this country, almost abandoned. There is no doubt that the statements made as to its efficacy were greatly exaggerated, but at the same time it must be admitted that tar is a very valuable remedy for many complaints. It is of very great value in the treatment of winter cough, chronic bronchitis, and asthma. It is largely used for these complaints both in France and Belgium, and patients who have tried it usually speak of it most enthusiastically. They say that by its use they are enabled to curtail the duration and lessen the severity of their attacks, and there can be no doubt that such is the case. An improvement is, as we can certify, usually noticeable in from four to seven days, it rapidly increases, and in about three weeks the cough is practically well.

There are several ways in which tar can be administered. We have already spoken of Berkeley's tar water. The French call it *eau de goudron,* and take it with sugar and water, or with claret at dinner, the combination being almost tasteless—a point of no small consideration with them. Anybody who would make a few gallons of tar water at the commencement of the winter for the benefit of the old people with coughs and colds would, we are sure, be doing them a service. They will not make any difficulty about taking it.

It is often convenient to be able to give tar in a more portable form. By the addition of a little wax and powdered liquorice root it can be made into pills, each containing a dose of two grains. Small capsules are also made containing from two to three grains, and may be obtained from any French chemist. Larger capsules are also sold, but they contain a dose larger than it is necessary to administer in cases of winter cough. There are several other preparations containing this drug in use on the Continent; for example, the *dragées de Christiania au goudron de Norvége,* which are elegant—and expensive—little bonbons, each containing five grains of tar. The tar pills (Pr. 70) will be found very useful, one to be taken every four hours.

Tar tabloids, each containing one grain, have recently come into use, and are largely employed during the winter months by sufferers from chronic bronchitis, bronchial catarrh, and asthma. One should be taken every four hours. Some patients swallow them whole, whilst others prefer letting them dissolve slowly in the mouth.

Creasote is a substance obtained by the distillation of wood tar. It is an almost colourless liquid, having a powerful characteristic odour. It is a favourite remedy for the toothache, and when a few drops are introduced into the hollow of a decayed and painful molar, it will usually afford relief. It is also a good remedy for checking vomiting of all kinds, and is largely used in the treatment of the sickness of pregnancy, cancer and ulcer of the stomach, and Bright's disease. It is frequently recommended for sea-sickness. It is used in the treatment of coughs and colds, and is especially useful in chronic bronchitis or winter cough. Either the creasote linctus (Pr. 58) or the creasote mixture (Pr. 23) may be used for cough. For other complaints it should be given in two-grain doses every four hours, and is best made into pills.

TARTAR EMETIC.—This salt is a combination of tartaric acid with potash and antimony, and is known chemically as "tartrate of antimony and potash."

It forms small colourless transparent crystals, freely soluble in water, destitute of odour, and having a sweetish metallic taste.

For internal use it is by far the best and most active of all the antimony preparations. It is often given in the form of antimony wine, but for most purposes a simple freshly-prepared solution in water is preferable. Antimony wine is made by dissolving forty grains of tartar emetic in a pint of sherry.

The ordinary dose of tartar emetic, when used to excite vomiting, is two grains dissolved in a little water. The corresponding dose of the wine is a fluid ounce, or two table-spoonfuls. Tartar emetic is somewhat tardy in its action, and often requires from twenty minutes to half an hour to produce vomiting, a circumstance which renders it almost useless in cases of poisoning. All nauseating medicines produce more or less weakness and prostration, but in tartar emetic these properties are pre-eminently developed.

When tartar emetic is administered for its constitutional effects, and not to produce vomiting, it is most advantageously given in small doses, and frequently. It is a good plan for many complaints in which antimony proves useful to dissolve a grain of tartar emetic in half a pint of water (Pr. 46), and to give a tea-spoonful of this every quarter of an hour for the first hour, and subsequently hourly for four or five hours.

Tartar emetic is a powerful remedy, and even this small dose may, when first given, cause vomiting. Should such be the case, the disagreeable complication may usually be avoided by adding sufficient water to make the mixture up to a pint, giving tea-spoonful doses of this diluted solution.

This drug, administered as above directed, is pre-eminently useful in pneumonia or inflammation of the lungs. Since the general adoption of this mode of treatment the number of deaths from this disease has greatly decreased. In the majority of cases the tartar emetic reduces the frequency of the pulse and breathing, eases the pain in the side, and, above all, checks the further spread of the inflammation. The earlier the drug is given the greater the chances of success.

In bronchitis or a bad cold on the chest, especially when the phlegm is copious, frothy, and difficult to expel, tartar emetic may be employed with considerable advantage. It may be given in the form of the mixture, or five drops of the wine may be added to each dose of the effervescing ammonia mixture (Pr. 99), and taken every four hours.

Children from six to twelve years of age are often attacked on the slightest exposure to cold with wheezing on the chest and difficulty of breathing. The wheezing is often so severe as to be heard at some distance, and the shortness of breath may be so troublesome as to necessitate the propping up of the little sufferer in bed. There may be, in addition, a nasty, hollow, barking cough, and very often the voice is quite hoarse. The attacks are often quite like those of asthma in their character and intensity. The tartar emetic mixture is in these cases invaluable, and will generally effect a cure.

That form of cold on the chest which in children is associated with vomiting and diarrhœa is usually quickly arrested by tartar emetic.

This drug is usefully employed in typhus and other fevers when there is much excitement and furious delirium.

Years ago there was no more popular medicine, and none more valued, than "James's powder." Nowadays it is seldom used. It is a white, gritty, tasteless, odourless powder, consisting chiefly of antimony and phosphate of lime. It enjoyed a reputation for the cure of almost every disease, but even its strongest advocates were obliged to admit that its action was extremely uncertain. So highly was it esteemed that it frequently sold for half a guinea an ounce. Its reputation is of the past.

TEA.—It is estimated that tea is habitually consumed by not less than five hundred millions of people, or about one-half of the human race. Amongst the Chinese and the inhabitants of Japan, Thibet, and Nepaul, it is drunk by all classes three or four times a day. In Asiatic Russia, in a large portion of Europe, in North America, and in Australasia it is a favourite beverage.

In China, tea has been used as an article of diet from a very remote period of antiquity. Curiously enough, they have no record or tradition respecting its first introduction. The Japanese, however, tell us that in the year 519, a holy man named Darma, the son of an Indian monarch, took refuge in China, and publicly taught that the only way to attain happiness was to eat nothing but vegetables and go without sleep. This enthusiastic vegetarian and anti-morpheusian was, however, on a hot summer's day overcome by drowsiness, and fairly nodded before his congregation. When he awoke to a knowledge of his violation of his own precept, great was his self-reproach, and being determined that he would not transgress a second time, he cut off his eyelids and threw them on the ground. In due time they took root, and gradually developed into the plant now known as tea.

Tea was probably first introduced into Europe about the middle of the seventeenth century, for in 1661 Pepys writes in his diary, "I sent for a cup of tea (a Chinese drink), of which I had never heard before." At first its use was not very common, as in the same century the East Indian Company considered it a rare gift to present the King of England with two pounds and two ounces of tea.

The plant which yields the tea leaves is a native of China, and still grows wild on the hills both of that country and Japan. The tea plants are raised from seed, which is sown in March. When a year old, the young bushes are planted out, and when placed in rows three or four feet apart have some resemblance to gooseberry bushes. The season for gathering varies in different districts, but the principal leaf harvest is in May or June. The leaves are plucked by women, and are usually gathered at three successive periods. The youngest and earliest leaves are the most tender and delicate, and give the highest flavoured tea. The second and third gatherings are more bitter and woody, and yield less soluble matter to water. The refuse and decayed leaves and twigs are sold under the name of "brick tea."

Tea leaves, when freshly gathered, are destitute of odour and flavour. The pleasant taste and aroma for which they are so highly valued are developed in the process of drying. The tea is rolled both to diminish its bulk and to enable the leaves to preserve their flavour. It is not fit for use until it is at least a year old, and the rich and luxurious Chinese usually keep their finest teas in porcelain jars furnished with narrow necks, in order to prevent the aroma from escaping. The quality of the tea depends chiefly on the method employed in drying. Either black or green tea may be prepared at will from the same leaves gathered at the same time and under the same circumstances. It is by lengthened exposure to the air in the process of drying, accompanied by perhaps a slight heating and fermentation, that the dark colour and distinguishing flavour are given to the black teas of commerce.

The principal varieties of black tea are known as Bohea, Congou, Souchong, and Pekoe. The chief green teas are Twankay, Hyson, Imperial, and Gunpowder.

BRANCH OF THE TEA PLANT.

The practice of scenting teas is very common, and various odoriferous plants are employed for that purpose in different parts of China. Many teas, especially the green teas, are artificially coloured by the addition of blue, white, and yellow colouring substance. A mixture of Prussian blue and burnt gypsum was formerly extensively used for the purpose, but indigo is now coming into fashion. It is said that one day an English gentleman in Shanghai, being in conversation with some Chinese from the green-tea country, asked them what reasons they had for dyeing the tea, and whether it would not be better without undergoing that process. They acknowledged that tea was much better when prepared without having any such ingredient mixed with it, and that they never drank dyed tea themselves; but remarked that as foreigners seemed to prefer having a mixture of Prussian blue and gypsum with their tea, to make it look uniform and pretty, and as these ingredients were cheap enough, the Chinese had no objection to supply them, especially as such teas always fetched a higher price.

It is curious that although tea is so extensively used, there is still considerable diversity of opinion as to the best method of preparing it. The Chinaman puts his tea in a cup, pours hot water over it, and drinks the infusion off the leaves without the addition of either sugar or milk. The Japanese powder the leaves before putting them in the pot. In Morocco they put green tea, a little tansy, and a great deal of sugar into a tea-pot, and fill up with boiling water. In Russia a squeeze of a lemon often takes the place of our milk or cream; and in Germany, where tea is made very weak, it is common to flavour it with rum, cinnamon, and vanilla.

On the first introduction of tea into this country, it was lauded as a remedy for almost every ailment afflicting mankind. It was said to remove lassitude, purify the liver, improve the digestion, create appetite, strengthen the memory, cure agues and fevers, and act as a specific for consumption. One panegyrist says, that while never putting the patient in mind of his disease, it cheers the heart without disordering the head, strengthens the feet of the old, and settles the heads of the young, cools the brain of the hard drinker, and warms that of the sober student, relieves the sick, and confirms the healthy. Epicures drink it for want of an appetite, *bon-vivants* to remove the effects of a surfeit of wine, gluttons drink it as a remedy for indigestion, politicians for the vertigo, doctors for drowsiness, prudes for the vapours, wits for the spleen, and beaux to improve their complexion. He sums up by declaring tea to be a great treat for the frugal, a regale for the luxurious, a successful agent for the man of business, and a healthy amusement for the idle.

Tea is a very useful drug, but this picture, we need hardly say, is somewhat over-drawn. Nevertheless, tea exerts a very decidedly stimulant and restorative action on the nervous system, which is perhaps aided by the warmth of the infusion. As an article of diet, it proves of the greatest value for soldiers. The hot infusion is particularly useful in over-fatigued conditions of the system, and under these circumstances there can be no doubt that it is infinitely preferable to alcoholic drinks. The hot infusion is potent against both heat and cold, and is a most valuable accompaniment on long journeys. It possesses, moreover, the valuable property of purifying even the most brackish waters.

There are certain complaints in which the use of tea is distinctly prejudicial. In flatulent dyspepsia, or indigestion accompanied by the formation of large quantities of wind, it is especially injurious, and its use often greatly retards the progress of cure. Many women ruin their digestive powers by taking large quantities of weak tea three or four times a day. The excessive consumption of tea, especially when combined with a poor diet, leads to a condition of nervousness and irritability which is quite pitiable. This habit is especially prevalent among dressmakers and others whose occupations are of a sedentary nature. In the out-patient department of many of our hospitals the effects of excessive tea-drinking are almost as noticeable as the results of intemperance as regards alcohol, and that is saying a great deal. It is not an uncommon practice with enthusiastic students to resist the claims of Nature for repose, and keep themselves awake at night by the use of green tea. The object is attained, but at a great price, the destruction of health and vigour, both of body and mind, being too often the penalty.

TEREBENE.—(*See* Pure Terebene.)

TOBACCO.—Tobacco claims consideration in a work on Materia Medica, not so much from its value as a medicinal agent as from the fact that it is almost universally used for the production of its sedative or narcotic effects.

The tobacco (*Nicotiana tabacum*) is probably a native of America—at all events, it was extensively cultivated and used by the inhabitants of various parts of that continent long before its discovery by Europeans. The aborigines of tropical America must have rolled up their tobacco leaf and dreamed away their lives in smoky reveries ages before Columbus was born. With them the pipe was a great diplomatist. In making war, in concluding peace, in all their deliberations, both public and domestic, it played an important part, and no treaty was ever ratified without the passage of the calumet. The transfer of the pipe from mouth to mouth was a token of amity and friendship, and with the chivalry of the forest it was a gage of honour which was seldom violated. From America tobacco was introduced into Spain, and in a few years a knowledge of its properties spread all over

Europe. When Walter Raleigh brought the plant from Virginia to England, in 1586, whole fields of it were already under cultivation in Portugal. It is probable that the cultivation of this plant in Europe preceded that of the potato by from 120 to 140 years.

The generic term, "Nicotiana," was bestowed on the plant in honour of Jean Nicot, who brought some tobacco from Lisbon and presented it to Catherine de Medicis as a herb possessing valuable properties. It is usually stated that the name tobacco was given to the plant by the Spaniards, who took it from Tobaco, a province of Yucatan. Humboldt, however, asserts that the word belongs to the ancient language of Hayti, or Saint Domingo, and that originally it was applied not to the herb, but to the tube through which the smoke was inhaled.

On the first introduction of tobacco into Europe every effort was made by writings, imposts, and bodily punishment, to restrict or put down its use. It is said that more than a hundred books were written to condemn the use of tobacco, foremost among them being the celebrated *Counterblaste to Tobacco* of James I., in which he speaks of it as being "a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black, stinking fume thereof nearest resembling the horrible Stygian smoake of the pit that is bottomless." There is an old tradition of the Greek Church which ascribes the inebriation of the patriarch Noah to the temptation of the devil by means of tobacco, so that the king was not altogether without authority for the black Stygian parentage which he assigns to its fumes. In Russia, smoking was absolutely prohibited, the knout being the punishment for the first, and death for the second offence. In Berne so much importance was attached to the custom that in the list of offences it followed the crime of adultery. In some of the Swiss cantons a council cited all smokers before them, and the innkeepers were ordered to inform against those who were found smoking in their houses. Urban VIII. was so enraged against the practice that he went in State to the Vatican and thundered excommunication on every soul who took the accursed thing in any shape or form into a church. As might have been expected, opposition and persecution excited only more general attention to the plant, awakening curiosity regarding it, and tempting people to try its effects, so that the use of the drug spread rapidly. The Turks and Persians have become the greatest smokers in the world, although their priests and sultans declared that smoking was a sin against their holy religion. The custom is now almost universal, and has been truly said, or rather sung:—

"Tobacco engages
Both sexes, all ages,
The poor as well as the wealthy;
From the court to the cottage,
From childhood to dotage,
Both those that are sick and the healthy."

Tobacco thrives in nearly every part of the globe. Amongst narcotic plants it occupies a place similar to that of the potato amongst food plants. It is the most extensively cultivated, the most hardy, and the most tolerant of changes in temperature, altitude, and general climate. The plant was formerly grown in many parts of England, particularly in Yorkshire, but now its cultivation is by law restricted to half a pole "in a physic or university garden, or in any private garden for physic or chirurgery."

What are the effects produced by smoking? In the case of the novice the symptoms produced are nausea, vomiting, extreme weakness, relaxation of the muscles, and a depressed action of the heart, the last mentioned being indicated by pallor of the face, weakness of the pulse, cold sweats, and a general tendency to faint. The effects produced on the habitual smoker are, of course, widely different, and of a much more pleasurable description. It is very difficult to analyse the sensations produced by the use of tobacco; we are usually content to recognise the fact that they are pleasurable, and to smoke on in peace. By the use of tobacco some people seem able almost to liberate the mind from the trammels of the body, and to give it a freer range and more undisturbed liberty of action. Bulwer Lytton, in his "Night and Morning," exclaims, "A pipe! it is a great comforter, a pleasant soother! Blue devils fly before its honest breath! It ripens the brain, it opens the heart, and the man who smokes thinks like a sage, and acts like a Samaritan."

There is no want of testimony in favour of the use of the drug. The "souveraine weed," as Spenser calls it, has been extensively lauded both in prose and verse. Kingsley, in "Westward Ho!" speaks of it as "a lone man's companion, a bachelor's friend, a hungry man's food, a sad man's cordial, a wakeful man's sleep, and a chilly man's fire." Old Hobbes of Malmesbury, the first and clearest of English philosophers, regularly had his twelve pipes a day, and kept to it till he was nearly as old as old Parr himself. Robert Hall, the most eloquent of English preachers, and John Foster, the most original of English essayists, were smokers; Campbell was a patron of the weed, and Byron's lines to "Sublime Tobacco" are as well known as Campbell's address to the "pungent nose-refreshing weed." Sir Walter Raleigh took it to the day of his death, for Aubrey says "He tooke a pipe of tobacco a little before he went to the scaffolde, which some female persons were scandalised at, but I think 'twas well and properly donne to settle his spirits." Thackeray was a great admirer of the weed, and in one of his essays says that he would rather smoke up the chimney than not smoke at all.

Is the use of tobacco injurious to the health? This is a question which it is very difficult to answer. By the non-smokers it is said that it causes blindness, palpitation of the heart, paralysis, diseases of the teeth, mouth, and tongue, dyspepsia, diarrhœa, and even falling of the bowel. The smokers, on the other hand, assert that you may smoke to all eternity without in the slightest degree injuring your health—in fact, you are rather likely to improve it. Of course, no one doubts for a moment that smoking is a very bad thing for boys, and that many of the pallid sickly-looking lads that one sees in the streets with dirty short pipes in their mouths would be benefited by a substitution of a fair allowance of birch for tobacco. The weight of evidence is in favour of the view that tobacco smoked in moderation by full-grown, healthy adults is not injurious to the system. We cannot undertake to define the term "in moderation"—each man must decide that for himself. There can be no doubt, however, that a man who lights his pipe or cigar in the morning before breakfast is decidedly overstepping the bounds of moderation. Smoking in excess is undoubtedly a very harmful habit, disordering digestion, lessening the appetite, inducing restlessness at night with disagreeable dreams, and weakening both body and mind. Sore throat and chronic dyspepsia may often be clearly traced to excessive smoking, and it will be found that the habitual smoker has generally a thickly coated tongue. There is one thing to be said, however, and that is, that the symptoms quickly disappear when the habit is discontinued.

Does smoking make people drink? There is a great diversity of opinion even on this subject. Let us avail ourselves of the experience of a distinguished scientific observer, who has devoted especial attention to the subject. He says:—

"The first time our reader walks down Regent Street after seven in the evening, let him drop into any place he chooses, and let him see who gets to his fifth glass of grog soonest—the smoker, or the man who does not; who soonest, with a voice increasingly husky and indistinct, indulges in a promiscuous style of conversation, more amusing than convincing—certainly not the smoker. Not that no smoker is ever overcome in a moment of temporary weakness—the best of us, alas, are but men! To err is human. We ourselves have risen from our bed with a slight sensation of headache, and a conviction, by no means slight, that we had made fools of ourselves the previous night. But it stands to reason that you, with a cigar in your mouth, should drink slower than the man who has nothing else to do but drink. You cannot drink equal. While you have lit your cigar and drawn half a dozen whiffs, and drank the health, temporal and eternal, of your divine Adele or dearly beloved Ellen, your friend, who does not smoke, has left nothing in his glass but a silver spoon. This is not random assertion —what a gent might term chaff. We have tried the experiment over and over again, and are quite ready to repeat it, my dear sir, at your expense."

Tobacco contains an alkaloid known as *nicotine*, which is the active constituent of the plant. It is a colourless, volatile, oily liquid, having a powerful odour of tobacco and a burning taste. It is almost as powerful a poison as prussic acid. A single drop given to a rabbit killed it in three and a half minutes. It is supposed that the "juice of the cursed hebenon," with which Hamlet's father was poisoned, consisted of this substance.

A small quantity of nicotine, or at all events of the products resulting from its decomposition, is always found in tobacco smoke. The form and construction of the pipe undoubtedly influence the proportion of the active ingredients which it contains. Thus, the Turkish and Indian pipes, in which the leaf burns slowly and the smoke bubbles up through water, absorb a large proportion of the poisonous vapours. The reservoir of the German pipe retains the larger portion of the oily and other products of the burning tobacco; and the long stem of the Russian pipe performs a similar function. The Dutch and English clay pipes retain least of any.

In what cases should tobacco be used medicinally? Smoking increases the flow of saliva, and many on this account maintain that it aids digestion and is useful in dyspepsia. In an old song we are told that—

"It helpeth digestion,
Of that there's no question;
The gout and the toothache it easeth.
Be it early or late,
'Tis never out of date,
He may safely take it that pleaseth."

This, however, can hardly be said to sum up the therapeutics of tobacco. For example, it acts as a slight purgative, and a pipe or cigar smoked after breakfast is often sufficient to ensure an easy and satisfactory relief of the bowels. The practice is not without advantage for persons troubled with habitual constipation. Ladies are occasionally recommended to use cigarettes for a similar purpose—the thin end of the wedge.

Tobacco is often used with advantage in spasmodic asthma.

It is usually unsafe to use tobacco as an external application, as sufficient may be absorbed to cause symptoms of poisoning.

TREACLE—TAMARINDS—FIGS—PRUNES—HONEY—MANNA.—These substances are all sufficiently familiar to us, and have long been valued medicinally for their laxative properties.

Treacle is the uncrystallisable syrup which drains from the moulds in the preparation of loaf sugar. In doses of a tea-spoonful and upwards it forms a very pleasant laxative, and is often given in combination with sulphur as "brimstone and treacle."

Tamarind is the pulp of the fruit of the tamarind tree, growing in the East and West Indies. In the preparation and preservation of tamarinds the fruit, having been first stripped of its shell, is placed in a cask, and then covered with warm water. It possesses an agreeable sweetish taste, and is considered no little luxury in hot climates. Medicinally it is used as a mild, cooling laxative. The dose is a quarter of an ounce or more, and it is sometimes made into a whey with milk.

Figs from the earliest ages have been held in great repute. In a primitive condition of society they served to furnish the nations of the East with an article, not of occasional luxury, but of daily and constant food. So highly were they esteemed by the Athenians that their exportation was prohibited under a heavy penalty. In Rome they were carried after the wine in the processions in honour of Bacchus, and the old gentleman himself is supposed to have owed his corpulence and vigour not to the grape but to the fig. By the Jews a bad fig year was regarded as a most serious calamity. Fresh figs, when ripe, are soft and succulent, and are a digestible, wholesome, and delicious fruit, which may be used with advantage in habitual constipation. When the fresh fruit is not obtainable, we must be satisfied with the dry, although as a medicinal agent it is far less efficacious.

Prunes are the dried fruit of the common plum, prepared by exposing them alternately to the heat of an oven and to the open air. They are very nutritious and form an excellent laxative for children. We have the most implicit confidence in stewed prunes.

In honey we have another very useful and agreeable medicine. It, as everybody knows, is secreted by the nectaries of flowers and sucked by the bees into their crops, where it undergoes some slight change, and is then stored up in the comb. The finest honey is that which is allowed to drain from the comb, and if obtained from hives which have never swarmed it is called "virgin honey." It partakes of the aroma of the plants from which it has been collected. It may be clarified by melting it in a water-bath, and straining it while hot through flannel. It is composed chiefly of sugar and water, but contains in addition gum and wax and a little volatile oil derived from the flowers. It is often used to cover the taste of other medicines, but taken alone it acts as a laxative. A mixture of honey and vinegar forms a useful gargle for sore throats.

Manna is an exudation obtained by making incisions into the trunk of the flowering ash, cultivated for the purpose in Sicily and Calabria. The tree is a native of Southern Europe, but is not uncommonly met with as an ornamental plant in our gardens and pleasure grounds. Although we are principally indebted for our manna to the ash, yet other trees, such as the larch, fir, orange, willow, mulberry, and oak, also produce it, although in smaller quantities. The trees are not tapped until July or August, when they have ceased to produce new leaves. Incisions about two inches in length are made in the stem by means of a hooked knife, and from these apertures the juice exudes and gradually solidifies. The best description of manna, called "flake manna," forms long white pieces not unlike stalactitic masses, from one to six inches in length, and an inch or two in breadth. It is a pleasant adjunct to many purgative medicines, and in doses of half an ounce or more acts as a mild laxative.

TRINITRINE.—(*See* NITRO-GLYCERINE.)

ZYMINE.—Zymine is a powerful digestive agent obtained from the pancreas. It bears the same relation to the pancreas or sweetbread that pepsin does to the stomach.

When milk is predigested with pepsin the product is unpalatable, but when zymine is used, there is little or no alteration in the taste.

The employment of milk peptonised with zymine has now become almost universal in the treatment of all fevers and acute diseases.

Milk is a good food and will do more than beef-tea to support the strength, but it is not easily digested by delicate and enfeebled stomachs. Peptonised is digested before it is taken, and throws no strain on the digestive apparatus. It is ready for immediate absorption.

The process of predigesting milk is perfectly simple. Every nurse and every mother ought to know how to do it.

Take half a pint of good fresh milk, and dilute it with a fourth part of water. Add half a Fairchild Zymine Peptonising Powder, and put the bottle to stand in a basin of hot water, or before the fire for twenty minutes. Then boil, sweeten, and add a little cream.

This is the simplest way, but many people instead of boiling, put the bottle to stand on ice, so that the process of fermentation may be arrested.

The peptonised milk should be used in place of ordinary milk.

When peptonised milk is required for a child, the proportions should be a quarter of a powder, a quarter of a pint of milk, and a quarter of a pint of water.

Children thrive well on peptonised milk, and its introduction has probably done more than any other therapeutic measure of modern times to lessen infant mortality. It is useful in diarrhœa, flatulence, colic, and a host of infantile disorders.

Peptonised gruel can be prepared without difficulty. Add a Zymine Peptonising Powder to half a pint of milk, and half a pint of gruel made with water. Keep warm as before, shaking or stirring occasionally.

It must be remembered that peptonised milk will not keep. It should be prepared as required for use. In the case of children, when a bottle is used, the Thermo-Safeguard Feeding-Bottle is essential. The utmost attention must be paid to the cleanliness of the bottle and its fittings, or there will be the risk of giving the child sour milk.

Peptonised milk and peptonised gruel are well adapted for persons suffering from weak digestion. In the treatment of dyspepsia and ulcer of the stomach they are invaluable.

Table of Doses.

In this table only medicines in common use are given. The doses are those ordinarily employed: in some cases it may be necessary to depart from the rule. Prescriptions for many of these drugs have already been given (*see* PRESCRIPTIONS). The doses are, in most cases, those suitable for adults. The proportionate dose to be used for children and young people is indicated below:—

Under	1	year old give	$\frac{1}{12}$	of the adult dose
,,	2	,,	$\frac{1}{8}$	,,
,,	3	,,	$\frac{1}{6}$	,,
,,	4	,,	$\frac{1}{4}$	,,
,,	7	,,	$\frac{1}{3}$	,,
,,	14	,,	$\frac{1}{2}$	,,
,,	20	,,	$\frac{2}{3}$	,,
Above	21	,,	full dose.	
,,	65	,,	the inverse gradation of the above.	

It should be borne in mind that certain drugs, especially opium and its preparations, must be given with great care to children.

Alum as an astringent, fifteen grains.
Antimony wine:
  As an emetic, a table-spoonful.
  In fevers, five drops.
Barley water, *ad libitum.*
Baume de vie, two table-spoonfuls.
Black draught, two table-spoonfuls or more.
Brimstone and treacle, a tea-spoonful.
Bromide of potassium, fifteen grains.
Cajeput oil, three drops.
Calomel as a purgative, three grains.
Camphor julep, two table-spoonfuls.
Carbonate of magnesia, half a drachm.
Carbonate of potash, fifteen grains.
Carbonate of soda, fifteen grains.
Castor oil, a tea-spoonful to a table-spoonful.
Chalk mixture, two table-spoonfuls.
Chamomile tea, a wine-glassful.
Charcoal, a tea-spoonful.
Chloral, ten to fifteen grains.
Chloric ether, fifteen drops.
Chlorodyne, ten drops.
Citrate of iron and quinine, fifteen grains.
Cod-liver oil, a tea-spoonful to a table-spoonful.
Colchicum wine, fifteen drops.
Confection of senna, a tea-spoonful.
Confection of sulphur, a tea-spoonful.
Decoction of aloes, two table-spoonfuls.
Decoction of bark, two table-spoonfuls.
Decoction of broom-tops, two table-spoonfuls or more.
Decoction of dandelion, two table-spoonfuls or more.
Decoction of sarsaparilla, two table-spoonfuls or more.
Dover's powder, ten grains.
Dill water for children, a tea-spoonful.
Easton's syrup, half a tea-spoonful.
Epsom salts, half a tea-spoonful.
Ergot, liquid extract of, fifteen drops.
Essence of anise, fifteen drops.
Essence of camphor, five drops.
Essence of ginger, fifteen drops.
Essence of peppermint, fifteen drops.
Friar's balsam, half a tea-spoonful.
Gallic acid, fifteen grains.
Gregory's powder, for children, ten grains.
Grey powder, five grains.
Infusion of calumba, two table-spoonfuls or more.
Infusion of cascarilla, two table-spoonfuls or more.
Infusion of gentian (compound), two table-spoonfuls or more.
Infusion of quassia, two table-spoonfuls or more.
Infusion of orange-peel, two table-spoonfuls or more.
Iodide of potassium, five grains.

Ipecacuanha wine :
  As an emetic, a table-spoonful.
  For cough, ten drops.
Lavender, compound tincture of, a tea-spoonful.
Lime water, two table-spoonfuls or more.
Liquorice powder (compound), 30 to 60 grains.
Mindererus's spirit, three tea-spoonfuls in water.
Mustard, as an emetic, a table-spoonful.
Paregoric elixir, half a tea-spoonful.
Parrish's chemical food, a tea-spoonful.
Peppermint water, two table-spoonfuls.
Pepsine, three to five grains.
Quinine wine, two table-spoonfuls.
Sal volatile, twenty to thirty drops in water.
Senna tea, half a cupful.
Spirits of camphor, twenty drops.
Spirits of chloroform, fifteen drops.
Spirits of horseradish, thirty drops.
Spirits of juniper, a tea-spoonful.
Steel wine, for children a tea-spoonful.
Sweet spirits of nitre, half a tea-spoonful to a tea-spoonful.
Syrup of chloral, a tea-spoonful for adults.
Syrup of poppies, for children half a tea-spoonful.
Syrup of senna, for children a tea-spoonful.
Tannic acid, fifteen grains.
Tar water, two table-spoonfuls or more.
Tincture of bark, a tea-spoonful.
Tincture of calumba, a tea-spoonful.
Tincture of ginger, twenty drops.
Tincture of nux vomica, five drops.
Tincture of quinine, a tea-spoonful.
Tincture of steel, fifteen drops.

N.B.—In every case by "tea-spoonful" is meant a MEASURED *tea-spoonful,* i.e. *the quantity marked on the measuring glass. This applies equally to table-spoonfuls, and even to drops.*

XXII.—DOMESTIC SURGERY.

THE object of these articles on domestic surgery is not the futile and mischievous one of attempting to make everyone his own surgeon, but to furnish our readers with such simple rules for the management of those slight accidents and emergencies of every-day life, as are commonly treated without resorting to medical advice. At the same time opportunity will be taken to point out those circumstances which indicate the necessity for immediate recourse to medical aid. The rules laid down must be regarded as only preliminary to the arrival of the doctor, and must not be insisted on should he, from the special nature of the case, see fit to carry out some different mode of treatment. Great harm may be done to a patient by injudicious meddling on the part of well-meaning, but only partially-informed, friends, who, finding the treatment pursued under medical advice different from that here laid down, express disapproval, and endeavour to shake the confidence of the patient in his medical adviser. When a case has once been undertaken by a surgeon, it is only right that he should be treated honestly, his directions fairly carried out, and his prescriptions attended to faithfully. If a patient or his friends are dissatisfied with their medical attendant, it is always open to them to have further advice.

There are certain affections which are commonly denominated "surgical," because they require some manual attention on the part of the attendant. These will be briefly discussed, in order to point out how far they may with safety be treated domestically, and when it will be desirable, and even essential, to have professional advice. Opportunity will be taken, in connection with these subjects, to describe the modes of preparation of poultices and other applications of household surgery, which, though they are, in fact, matters of every-day requirement, are frequently mismanaged.

It may be here remarked how essential for relief in these surgical affections it is that there should be no concealment of symptoms from one's medical adviser, on account of scruples, no doubt honourable, but misplaced, because of the so-called "delicacy" of some of the subjects involved. Valuable lives are often sacrificed from the concealment of the existence of a rupture; and many persons live a life of discomfort for years, and even allow their health to be undermined, through the concealment of some affection of the lower bowel which could be readily remedied by medical means.

There is probably no department of science which has made greater strides during the last fifteen or twenty years than that which appertains to the surgical treatment of the sick. The perfection of the antiseptic method has rendered perfectly safe many operations which, without its aid, would have been impossible.

ABSCESSES may form in any part of the body, and are often only evidences of deeper-seated mischief, for which medical advice should be at once procured. In cases of disease of the spine, leading to projection of the bone, and what is commonly called "broken back," an abscess very commonly forms, without any special pain, in the upper part of the thigh, and the same kind of thing may be witnessed in other parts, the patient experiencing no pain, but having an elastic swelling, in which the peculiar and characteristic sensation due to the fluctuation of the contained fluid may be readily felt with the fingers. These chronic or cold abscesses should always be submitted to a medical man, as they may be of great importance, and their treatment requires skill and attention. The more acute abscesses have much the same symptoms as whitlows, there being heat, redness, and tenderness of the part, followed by a throbbing pain, and tension of the skin from the presence of matter within. Poulticing and fomentations form the appropriate treatment, and, if pursued long enough, will no doubt lead to the breaking of the abscess and the relief of the patient. Many days will, however, be consumed in the process, during all which the patient will be worn out with pain and want of rest, whilst a momentary incision by a surgeon's skilful hand will give immediate and permanent relief. It is very mistaken kindness for the friends to abet a patient in refusing to submit to a moment's pain in order to obtain a cure; and the patient is usually ready enough to express gratitude to those who have been "cruel only to be kind," the moment the relief is experienced. (*See also* Vol. I., page 192.)

ANÆSTHETICS.—The various methods of inducing anæsthesia have been subjected to re-investigation, with the result that ether has almost superseded chloroform for this purpose. The introduction of the great local anæsthetic cocaine has proved an incalculable boon to many sufferers. It by no means trespasses upon the domain of the general anæsthetics, but under its influence many operations on the mouth, larynx, tongue, and mucous membranes generally, can be performed painlessly and without taking away the senses of the patient or disturbing his mental equilibrium.

ANTISEPTIC TREATMENT.—Antisepticism, or Listerism as it is sometimes called, does not depend on the employment of any one particular drug, but is based on the general principle of preventing putrefaction by excluding the admission of dangerous germs. Reduced to its simplest expression it may be said to be scientific cleanliness. It implies not only absolute cleanliness of every instrument employed and of all dressings and applications, but also scientific purity of the surrounding atmosphere, and of the medium in which the patient and his attendants are placed. For example, not only the surgeon, but the nurses, are compelled to wash their hands and to clean their nails by brushing them thoroughly with an antiseptic solution, whilst no person should be allowed in even remote contact with the patient who has been exposed to the infection of any contagious disease, or any similar possible cause of mischief. No important surgical operation is now ever performed without rigid antiseptic precautions, and to do so would be almost criminal except perhaps in certain high altitudes where the air is practically free from contamination, and is in itself antiseptic. These antiseptic precautions are equally applicable to parturient women, and are constantly resorted to in confinements, especially when the slightest suspicion is entertained respecting the sanitary condition of the dwelling. The exact drug employed is a mere matter of detail, and has varied not only with different operators, but at different periods of their careers. At first the most popular member of the antiseptic group was carbolic acid, but this of late has fallen into comparative disrepute, and boracic acid, thymol, and eucalyptol, have been received with favour. Probably the most active of all antiseptics is the powerful poison known as corrosive sublimate, which has been pressed into the service of suffering humanity. By carefully diluting the solution it may be obtained of such a strength that it is fatal to bacteria and all the lower forms of animal life, but is powerless to injure the vitality of the tissues or to exert any prejudicial effect on the human economy.

BITES OF ANIMALS.—The dog is the animal whose bite is most commonly met with, though occasionally the cat, rat, or horse inflicts injury in this way. The fear of hydrophobia is always present in the mind of a patient who has been bitten, and the possibility of inoculation of the poison of rabies must not be forgotten, though the frequency of its occurrence is greatly exaggerated. When a person is bitten through the clothes, even by a confessedly rabid dog, he will, in all probability, escape inoculation, and the same thing may be said with greater certainty when the skin is not broken, but only bruised. If a wound is inflicted, a string should if possible be at once tied round the limb between the bite and the heart, and the wound should be well washed and sucked until medical aid is obtained. Failing this, and supposing the dog to be really rabid, it would be justifiable to cauterise the wound thoroughly with lunar caustic or a hot iron, or to mop it out with strong nitric or hydrochloric acid. All these applications are necessarily excessively painful, and could hardly be borne without an anæsthetic, save by the most determined person.

BLEEDERS are persons who suffer from what is scientifically called a "hæmorrhagic diathesis"—*i.e.*, they bleed profusely from the slightest scratch, and the blood is so peculiar that there is the greatest difficulty in stopping its flow. This disease is, fortunately, of not very common occurrence, and is only mentioned here in order to warn parents of children who suffer from a tendency to bleed, that they should always inform their medical man and their dentist of the fact, so that, as far as possible, all sources of bleeding may be avoided; and should hæmorrhage accidentally occur, immediate medical assistance should be obtained, since every hour's delay renders it more difficult to stop the bleeding.

BLEEDING FROM THE NOSE is sometimes violent, and usually an evidence of some derangement of the general health, for which medical advice should be sought. In order to check the bleeding, cold water may be employed to bathe the face and head; or ice water may be injected with a syringe or india-rubber bottle into one nostril, when, if the patient will lean forward and keep the mouth open, the water will flow round the back of the nose and out of the opposite nostril. In slight cases, merely sniffing up cold air forcibly will often check the bleeding, and, in addition, powdered alum or tannin may be used as snuft. When the bleeding continues for any time, the surgeon should be called in to plug the nostrils.

BOILS are very common, and very painful affections, and are usually found in persons who have got into a low state of health. A boil often begins in a little pimple, and if this is protected from irritation by being covered with a piece of *papier Fayard,* or soap plaster, whilst the general health is improved by change of air and altered diet, very probably there will be no further trouble. If, however, a regular boil forms with a red surface and great tenderness, it had better be poulticed, and either allowed to break, or—a great saving of time and pain—a narrow knife or a *sharp* blade of a pair of slender scissors being pushed into the centre of it, and to the depth of half an inch, will allow the matter to escape with immediate relief. When a boil has broken, it heals up readily enough under any simple dressing—either a little spermaceti ointment or a piece of wet lint under oil-silk. (*See also* BOILS, under TREATMENT OF DISEASES, Vol. I., page 285.)

BOW LEGS are common in "rickety" children who have been put upon their feet too soon, and are, therefore, more common among the poorer classes than among those who have attendants to carry them when young. The earthy material of the bones of these children being deficient in quantity, their legs bend with the weight of the body, and if not attended to the deformity will be permanent. The great point is to improve the little patient's health by sufficient and proper food, and particularly by supplying it with genuine and unadulterated milk and wheaten bread, both of which articles of diet contain the earthy salts necessary for the formation of bone. Fresh air and, if possible, the sea-side, are very advisable if they can be procured, and the medical treatment must be carefully carried out under the direction of a competent adviser. As regards the use of apparatus for the treatment of this and every other form of deformity, the parent should be guided by the advice of a surgeon, and not by that of a self-interested instrument maker. Many slight cases of bow legs do perfectly well without any apparatus at all, and in most cases a simple lath on the inside of the leg, with broad webbing straps and buckles, is as efficacious for the treatment, and better, because lighter, for the child, than complicated and expensive steel and leather supports.

BRUISES and CONTUSIONS are common accidents where there are children, and fortunately a child is able to sustain, without serious after-consequences, a bruise which might be of importance to an older person. The application of cold has a tendency to check the swelling and sub-cutaneous extravasation of blood constituting a bruise, and this may be applied in any form most convenient—cold vinegar and water, iced water, or the favourite cold metal spoon.

Raw beef-steak is popularly supposed to have a great controlling effect upon bruises, but apparently without good foundation.

There is a medical remedy of recognised utility in these cases, however, namely, the tincture of arnica; and this may be painted on the skin, if not broken, or applied diluted with water, if the skin is torn. There is, however, one caution to be observed in the use of arnica—that in some persons it excites an irritation of the skin closely resembling erysipelas, particularly if applied to a broken surface. Some caution should, therefore, be used in its first application, though the frequency of the occurrence of any untoward result is probably exaggerated.

Hazeline is another excellent remedy and is absolutely free from risk. It should be applied freely on lint.

Contusions are more severe accidents than mere superficial bruises (with which, however, they may be combined), since they may endanger the life of the sufferer from injury to deep-seated and important organs. The immediate effect of a severe contusion of any part is ordinarily to produce faintness and nausea.

The patient should be laid in an horizontal position, should have plenty of fresh air (and consequently should not be crowded upon by bystanders), and may, if able to swallow, drink a *small* quantity of weak brandy and water or wine. On recovering from the first faintness, no other symptoms may appear, and the patient may have received no further injury than the "shock" of the accident; but if, from the nature and severity of the injury itself, it may be suspected that some internal injury has been received—as shown by faintness, by hiccup, or pain in the abdomen or chest—recourse should be had to medical aid.

BURNS and SCALDS.—Burns are probably not quite so frequent as scalds, but are much more alarming at the time of their occurrence, and, if severe, are much more serious in their results than scalds.

The slightest form of burn, viz., a superficial burn or scorch, merely reddening without destroying the skin, may be produced by a slight explosion of gas, or the ignition of some article of clothing which has been rapidly extinguished. Here the pain is severe for the moment, but rapidly subsides as soon as the burnt surface is protected. This can be readily effected by dredging flour over the part, and wrapping it up in cotton wadding; or, should the part burnt be one not readily covered in this way, *e.g.*, the face, by painting it over with a mixture of equal parts of collodion and castor oil, or with a solution of nitrate of silver, such as the nitrate-bath of photography.

When the burn is severe, little blisters rapidly form on the burnt part, and these *vesicles*, as they are surgically termed, require careful treatment. If, as is sometimes recommended, these vesicles are left to themselves, the contents solidify and a jelly-like mass is left, which has afterwards to be got rid of by poulticing, to the great discomfort of the patient; or, even if this coagulation does not take place, the thin scarf-skin, or cuticle, raised by the blister is apt to be torn away and leave a tender surface beneath. The best plan, therefore, is at once to prick the blisters on one side with a needle, or to make a small opening with a sharp pair of scissors, and then carefully to squeeze out the watery contents, pressing down the skin gently but firmly with a piece of cotton-wool. When this has been done the case may be treated by any of the methods already given for slight burns, but it must be borne in mind that fresh vesicles may form after the first dressing, and hence great care must be taken, in the subsequent dressings, not to tear open the blisters unintentionally.

Scalds resemble slight burns both in their symptoms and treatment, and need not, therefore, be treated of at greater length. Severe burns, such as arise from the clothes taking fire—crinoline accidents, as they used to be called—are very serious, both as regards the life of the patient, and her future comfort, should she survive; and medical attendance should be immediately obtained. Lacking this, however, it may be noted that the *immediate* danger to the sufferer's life is due to the violent "shock" which the system sustains, as is shown by the faint, semi-conscious, and pallid condition in which the patient is left when the conflagration is extinguished. The proper treatment will be to restore warmth and vitality to the sufferer, and this can be best done by wrapping her in a blanket, and placing her in bed (or before a fire, if it is winter), with hot bottles or bricks so arranged about the legs and trunk as to impart warmth without interfering with the burnt surface.

In the case of a child (and of an adult too, if conveniences are at hand), a warm bath is at once the most soothing and appropriate treatment, since the warm water (the temperature of which must be carefully maintained at 90°) soaks off all the charred clothing, etc., and leaves the burns in the most healthy condition for dressing. At Vienna, baths are so contrived that patients suffering from burns, or obstinate skin diseases, can spend days or even weeks in them; and anywhere, with care and attention, the temperature of a bath should be kept up for some hours at least.

In addition to external warmth, a severely-burnt patient will bear the administration of some hot cordial drink, and then pending the arrival of a medical man, no harm can possibly be done by enveloping the burnt parts with cotton wadding.

Burns are dangerous not merely from their immediate effects, but from the complications which are apt to follow in their train. Thus, in children especially, inflammation of the lungs is very apt to follow a burn about the trunk; and again, ulceration of the bowel is found to be a frequent cause of death in these cases. The friends of a patient who has been burnt should, therefore, be careful to call the attention of the medical man in attendance to any cough or difficulty of breathing on the one hand, or to the occurrence of any diarrhœa on the other.

With the best care, burns are, undoubtedly, very fatal accidents, and as prevention is better than cure, it may not be out of place to urge the necessity for wire fire-guards over *all* fire-places to which children or females have access. Men, from the nature of their clothing, are much less liable to burns than women, unless, indeed, they indulge in the pernicious practice of "reading in bed" by candle-light.

Even when the first dangers of a severe burn are surmounted, the patient will have much to undergo in the healing of the wound, and here a fresh danger comes in—that of the contraction of the tissues in healing, so as to leave great deformity behind. Patients and their friends are sometimes more to blame than their attendant for terrible contractions of the neck, arms, etc., frequently seen after burns. They do not carry out fully the surgeon's instructions, from not understanding their importance. Being intent only upon healing up the wound, they cannot understand the necessity for care and attention. It may be laid down as an axiom that the quicker a wound heals, the more it contracts, and it is evident, therefore, that the slower a wound can be made to heal, the less likely it is to leave unsightly contractions behind. In order to prevent contractions, it is often necessary to confine the patient to an irksome position, to stretch the neck, for example, or to apply a splint to keep out the arm; and these inconveniences should be cheerfully borne, when they are ordered by a medical man.

It may not be inappropriate here to give a few hints as to the best method of extinguishing the flames when a woman's or child's dress has unfortunately caught fire. If the sufferer has presence of mind enough to throw herself on the ground and roll over and over until the bystanders can envelop her with some thick and non-inflammable covering, her chances of escape from serious injury will be much increased; but, unfortunately, the terror of the moment ordinarily overcomes every other feeling, and the sufferer rushes into the open air—the very worst thing she can do. The first thing for a bystander to do is to provide himself with some non-inflammable article with which to envelop the patient, and a coat or cloak—or, better, a table-cloth or drugget—will answer the purpose. Throwing this around the sufferer, he should, if possible, lay her on the ground and then rapidly cover over and beat out all the fire, keeping on the covering until every spark is extinguished. To attempt to extinguish fire by water is useless, unless the whole body of flame can be put out at one blow; and for one lightly-clad female to attempt to succour another, when other persons are at hand, is simply to imperil two lives instead of one.

In the case of a house on fire, it is to be remembered that death is more frequently the result of suffocation from smoke than from contact with flame, and every effort should be made to reach the open air by crawling along the floor (where there is usually breathing space) so as to reach a window, or, if necessary, by enveloping the head in a thick shawl to exclude the smoke while making a rush along a passage or down a staircase.

BURST VARICOSE VEIN, A.—This, in the leg, gives rise to serious bleeding, which is dangerous if not rapidly checked. As the accident ordinarily happens when the patient is standing or walking, she (for it is usually women who suffer from varicose veins) should immediately lie down, and the leg should be raised, whilst a bystander presses the finger upon the bleeding point. A pad of lint and a firm bandage should then be applied, and the patient should rest the leg for a few days, and continue the use of the bandage as long as the veins are swollen.

To bandage a leg properly, the foot must be raised and the bandage secured round the ankle by crossing the ends in front of it, as represented in Fig. 1. The bandage is then carried beneath the foot, and again around the ankle once or twice, and then round the leg, each turn overlapping the preceding one. When the calf is reached, it will be necessary, in order to make the bandage fit properly, to turn it down on the outer side of the limb each time the bandage surrounds it; and in order to do this neatly, the bandage should not be drawn tight until after the "turn" has been made. It will assist in doing this neatly if the finger is laid upon the bandage, to fix it at the point where the turn is to be made, as shown in the illustration (Fig. 2).

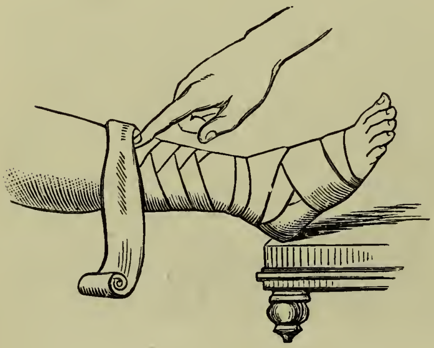


FIG. 1.

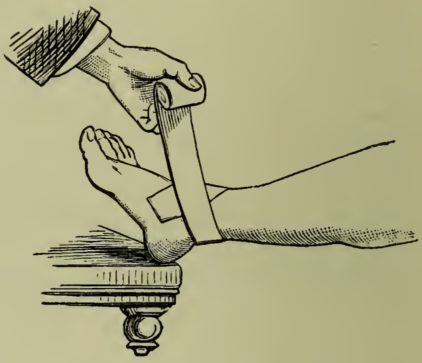


FIG. 2.

People who suffer from varicose veins should avoid prolonged standing, the use of tight garters, and above all a constipated condition of the bowels. The failure to provide seats for young women engaged in shops often gives rise to much inconvenience and suffering.

CARBUNCLES are much more serious affections than boils, which, however, they much resemble, except in being larger, and therefore more dangerous to the patient. (*See also* CARBUNCLE, Vol. I., page 324.)

COLD IN THE EYE, A.—This is a very common affection, and consists in an inflamed condition of the membrane covering the eye-ball and lining the eye-lids, and is often due, as the name implies, to exposure to a draught. The patient feels as if some dust had got into the eye, and can sometimes be hardly persuaded to the contrary; the white of the eye itself is seen to be reddened, and there is a constant flow of blinding, scalding tears. The best treatment is to foment the eyes with pure warm water, or better, with water in which two or three crushed poppy-heads have been boiled for half an hour, to extract their sedative qualities. A shade should be worn over the eyes in the intervals of fomenting, and a dose of rhubarb and magnesia should be administered. If the inflammation does not subside in a day or two a doctor should be consulted; but, if this is not possible, good will probably be done by dropping into the eyes, two or three times a day, some solution of sulphate of zinc or white vitriol, in the proportion of one grain to two table-spoonfuls of water.

Strumous children, especially when improperly fed, often suffer from another form of inflammation of the eye, in which the chief symptom is intolerance of light, the child using its hands to exclude the light as much as possible, or, if in bed, burying its head beneath the clothes. These cases require careful local and constitutional treatment, for which medical advice should be sought; but, wanting this, the little patient will be much relieved by having its eyes frequently bathed with cold water, and wearing a green shade over them.

New-born children occasionally suffer from another disease of the eye, of which the chief symptom is a discharge of yellow fluid or *pus* from beneath the lids, which are apt to be glued together by the discharge drying on them. This is a very serious affection, since the sight of the eye may be utterly lost if it is neglected, and medical advice should, therefore, be obtained. In its absence the eye should be carefully washed out several times a day with warm water, and a lotion of alum, in the proportion of ten grains to an ounce of water, be thoroughly applied. In doing this the greatest care must be taken not to convey any of the yellow fluid into the eye of another person, since it is highly contagious, and will certainly lead to violent inflammation of any eye it may happen to touch.

In washing the eye, the best plan is for one person to hold the child firmly on its back, with its head secured between the knees of the nurse who is to wash it, and its body resting on the knees of the assistant. Gently separating the eye-lids with the fore-finger and thumb, the nurse then lets the water or lotion trickle in between them from a small, clean, and soft sponge, then wipes the lids gently with the sponge, and repeats the operation on the opposite eye. When eye-drops have to be applied the same position should be adopted, and the drops may be conveniently extracted from the phial and inserted between the lids with an ordinary quill-pen, the nib of which has been rounded off. In making a shade for the eye, a piece of cardboard large enough to cover both eyes, and shaped out so as to fit the forehead, should be covered with green silk, and attached by a ribbon round the forehead.

CONCUSSION OF THE BRAIN is the common result of a blow on the head, and cannot be too seriously regarded. In *any* case of injury to the head, where insensibility has occurred, a doctor should be summoned, for even in slight cases, when the concussion has apparently only produced a temporary dizziness, careful treatment, both at the time and after the injury, will be necessary to restore the patient to a healthy state of both mind and body.

The rules for treatment are:—

First send for the doctor, and then place the patient in an easy position so that his breathing is not impeded.

Then loosen his clothes so that they afford no obstruction.

If in the house, keep the windows open; if in the street, keep the crowd back.

Apply smelling salts to the nose and dash a little cold water on the face and head.

In any case of insensibility from injury to the head, no harm can be done by cutting the hair close, and applying cold water to the head until the surgeon's arrival; or should this be delayed, and the patient's body be cold and the skin clammy, hot bottles may be put to the feet in addition. Beyond this, however, it is never safe for a non-professional person to go, in a case of severe injury to the head; and most particularly ought the administration of stimulants in any form to be avoided.

Cases of head-injury are often more grave in their after-consequences than in their immediate symptoms, and it is sometimes difficult to persuade the friends of a patient who is apparently well, of the necessity for rest and quiet for some weeks after the accident. Irritability of temper and inability to bear slight noises are often but symptoms of irritation of the brain, and should be at once reported to the medical adviser.

DISLOCATIONS.—A dislocation, like a fracture, should always be submitted to the care of a surgeon as soon as possible. When a bone has slipped from its socket the limb is useless, and there is more or less pain, and the neighbourhood of the joint is deformed.

A dislocation of the shoulder is at once the most common, the most painful, and the most readily reduced of these accidents, and we venture, therefore, to give a few hints for its treatment. A fall into a ditch is a common cause of this accident, the elbow being caught on the bank and suddenly thrust upwards, when the head of the bone slips out of its socket and into the arm-pit, giving rise to excruciating pain from its pressure upon the large nerves. This being an accident which may happen to a rider when hunting, or when unable to obtain assistance, he may safely make an attempt to reduce the arm himself, by using a gate for the purpose of a fulcrum, as shown in Fig. 3. Here, lifting his arm over the gate, the patient grasps with the hand of the affected side the lowest bar he can reach, and allows the weight of his body to hang on the other side of the gate until, by the pressure of the top bar, the bone is forced into its socket with a snap.

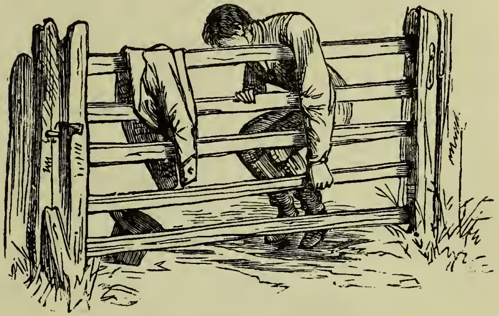


FIG. 3.

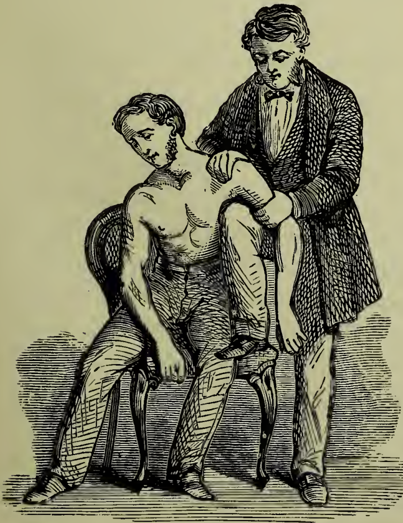


FIG. 4

Another method, which may be safely employed by a bystander, is to seat the sufferer in a strong chair, and to put the foot on the seat with the bent knee under the dislocated shoulder, as shown in Fig. 4. The arm is then to be grasped and forcibly bent over the knee, when the dislocation will probably be reduced; no more violent efforts are justifiable in the hands of non-professional persons, and in any case, even of *reduced* dislocation, the patient should be seen by a surgeon as soon as it is convenient, lest any other injury which he may have sustained at the same time should have been overlooked.

DROWNING is the most common cause of serious suspended animation, and, as accidents may happen at any moment, everyone should know what to do on the emergency. In cases of drowning, every moment is of importance, and the attempts at resuscitation should, therefore, be begun as soon as the sufferer is drawn from the water, and without conveying him any long distance to a house. The great object of treatment is to rouse the heart by inducing respiration, as in the case of fainting, and if all efforts at this have ceased, recourse must be had at once to "artificial respiration," by the following method :—

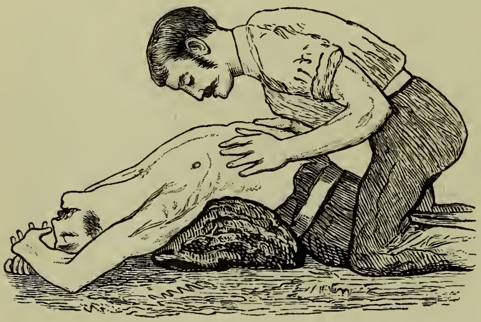


FIG. 5.

The mouth being cleared of any dirt or saliva which may be in it, the tongue should be drawn forward, and held with the finger and thumb, or secured with a piece of ribbon, or an elastic band passed over the tongue and under the chin. This drawing forward of the tongue is very important, as it opens the wind-pipe, and must never be omitted. The patient being then laid on his back, with the shoulders and head slightly raised, the operator kneels behind his head, grasps the arms just above the elbows, and draws them steadily and gently upwards until they meet above the head. By this means the walls of the chest are expanded, and air is drawn into the lungs, and a second or two should be allowed for this to take place. The operator should then lower the patient's arms to his side, and press them against his chest so as to force out the air from the lungs, and thus imitate respiration. This series of movements should be repeated twenty times a minute—not more—and the time should be taken from the watch of a bystander, or it will be found in practice that anxiety will lead to hurry and consequent damage. As it will be impossible for one person to keep up the exertion necessary for many minutes, from the fatigue consequent upon it, he should be relieved as often as may be necessary by another, who should have watched and learnt the method of proceeding; but it is important that all directions should be given by one person, since confusion and delay are sure otherwise to occur. Whilst efforts at restoring respiration are being thus unceasingly carried out, the attention of other assistants should be given to restoring the warmth of the body of the drowned person, by removing wet clothes, applying hot blankets and bottles, and by using friction assiduously to the limbs, in an upward direction, so as to favour the flow of blood towards the heart. The accompanying illustrations will give a good idea of the methods to restore respiration in the apparently drowned.

The utility of a warm bath is questionable, and should be resorted to only when the patient is suffering from extreme cold. In every case it is well to dash cold water over the face and chest, so as to excite respiration, and the use of the warm bath should not be continued more than five minutes, without medical sanction. Efforts at resuscitation should be continued for at least an hour, even in the most unfavourable cases. Patients recovered from drowning generally require careful after-treatment for a few days, but this is best left in the hands of the medical attendant.

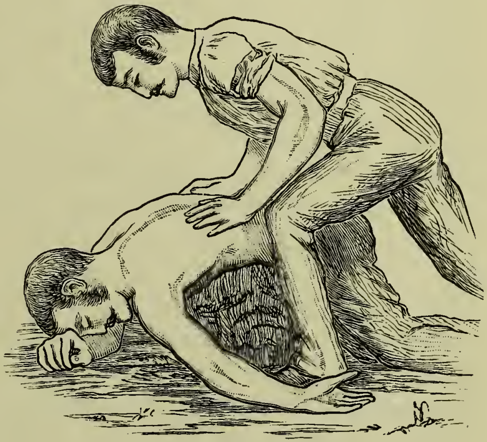


FIG. 6

It must be obvious to everyone who has devoted any thought to the subject that the mere reading of a list of instructions for resuscitation is not likely to be of much practical use at a critical moment. In the hurry of the moment the mind becomes confused, and the directions are forgotten. Instruction to be of any use must be practical. A "Life-Saving Drill" has been organised, and is now taught in certain regiments of the army, and also to a limited extent in some departments of the navy, volunteer, and police forces. It takes but a brief time to inculcate it into the minds of men already versed in ordinary parade business, whilst its acquirement will often prove of inestimable service to an unfortunate comrade. We make no attempt to describe the drill, for the instruction, as we have said, must be practical to be of any use. Once learnt it is never forgotten. (Figs. 5 and 6.)

It is generally said that a complete immersion of two minutes proves fatal, but professional swimmers who exhibit in tanks, often remain under water for four minutes, and are apparently none the worse for it.

DUST IN THE EYE is very distressing from the irritation in that sensitive organ which it immediately excites. When the foreign body is merely lying beneath the eye-lid it can often be removed by drawing the upper lid well down over the lower, and then allowing the eye to be slowly opened, when very generally the intruder will be entangled in the lower lashes and thus removed. If this little manœuvre, repeated once or twice, does not prove successful, it will be necessary to turn the upper lid up, so as to expose its under surface. This can be accomplished by a non-professional person with a little care, and without any risk of injuring the eye, as follows:—The patient being seated, and leaning his head back against the operator's breast, the latter, holding an ordinary bodkin in one hand, presses it gently on the outside of the lid, and about half-way down. With the fingers of the other hand he then seizes the eyelashes, and, drawing the lid a little forward, turns it up over the bodkin. This will be accomplished readily enough if the operator is steady and the patient willing, and the whole surface of the eye will then be exposed, when the foreign body can be seen and removed. If, however, the particle is of a pointed character—*e.g.*, a piece of steel —and is embedded in the cornea, or transparent covering of the eyeball, the assistance of a surgeon should be at once obtained to ensure its safe and early removal. In any case of injury to the surface of the eye, the application of a drop of castor or other oil, as recommended in the previous section, will be found of great service.

FLAT FOOT occurs very generally in young persons who have had their strength overtaxed in carrying weights — for example, among nursemaids and errand-boys—though it may occur later in life, as is seen in the case of soldiers and policemen, and others who are on their feet during many consecutive hours. The sufferer finds the feet remarkably tender and painful after walking, and if it be neglected the distortion becomes so confirmed as to render him quite lame. In a flat-footed person, if he be made to stand up with bare feet, it will be seen that the arch of the foot has been more or less broken down, so that instead of the weight of the body coming upon the extremities of the arch—the heel and the ball of the great toe—the centre bones have fallen down and touch the ground, and hence the pain.

The great object of treatment is to support the bones of the foot until the ligaments which have become relaxed shall have again become braced up. With this view, the sufferer should avoid much walking, and especially the carrying of heavy weights, and should have his foot carefully bandaged, as shown in a preceding paper. In order to restore the arch of the foot, the best plan is to have a piece of cork fitted to the inside of the boot so as to press up the fallen bones as much as the patient can bear without pain. After a time, as the foot improves, this can be increased in thickness, and so eventually the arch of the foot will be restored. When this has been done, a metal spring in the "waist" of the boot, as in the "Flexura" boot, is useful in preventing a return of the complaint.

FOREIGN BODIES introduced into various parts of the body cause more or less mischief; and, as a rule, the earlier they are removed, the better for the patient.

Foreign bodies are often introduced by children into the nose or ear, in sport, and are generally of a more or less globular form, such as beads, pebbles, cherry-stones, or beans. These, if near the orifice, may be readily hooked out with one of the common ear-picks found in ladies' dressing-cases, or with the loop of a common hair-pin; but if more deeply placed, injudicious poking with instruments may do harm, especially in the ear, and it is better to have recourse to the injection of a stream of warm water with a good-sized syringe, by which the interloper may be washed out. In the case of the nostril, a violent sneeze, induced by the inhalation of a pinch of snuff or pepper, will often dislodge the obstacle; but if recourse is had to syringing, the best method is to inject the water through the *opposite* nostril, when if the patient leans forward, and keeps the mouth open, the water will run round the back of the nose and out at the affected nostril, bringing the foreign body with it.

The common notion that "earwigs" have a tendency to find their way into the ear is a popular delusion, but as it occasionally happens that an ant or other small insect enters the ear, and gives rise to pain and irritation, it may be well to mention that the simplest way of relieving the sufferer is to place the head horizontally and to fill the ear with water, when the insect will be at once floated out of the cavity.

Foreign bodies in any part of the wind-pipe are always serious, and may be immediately fatal. The accident commonly happens from a child having some plaything, such as a bean, small marble, bead, or nut-shell, in its mouth, and being desired to take it out, when, either in the hurry to obey, or possibly from its disinclination to do so being quickened by a cuff, the foreign body slips into the wind-pipe, and produces serious mischief.

In the well-known case of the late Mr. Brunel, the eminent engineer, whose life was endangered by an accident of this kind, it arose from his performing a conjuring trick with a half-sovereign in his mouth, and the coin slipping into his wind-pipe. When the foreign body becomes fixed in the upper part of the wind-pipe or larynx, so as to obstruct the breathing, the patient becomes black in the face, and falls back apparently dead. This sometimes happens during a meal, from a child or grown-up person happening to cough while eating, and thus drawing a piece of food into the air-passages.

Whatever the cause, a bystander should, without hesitation, thrust his fore-finger to the back of the throat, and endeavour to hook up with it the offending body, and this can often be done, when the patient will at once breathe again. If this method is not successful, the patient, if a child, should be held up by the legs and be smartly thumped between the shoulders, when not improbably the foreign body will drop on to the floor, and the child will then begin to respire and cry; but if respiration is still suspended, cold water dashed on the chest will probably rouse it, or, if not, recourse must be had to artificial respiration. Medical aid should be summoned at once in any case of serious choking, but the majority of these cases do well without it. If, however, the foreign body is not dislodged by the efforts of bystanders, an operation is necessary to save life, and every moment is of importance. Even if the urgent symptoms have passed off, and the child appears to be restored to health, although the foreign body has not been *found*, the advice of a surgeon should be sought at once, as it may still be lodged in the deeper air-passages, where it may cause fatal mischief if not speedily dislodged.

Foreign bodies seldom lodge in the gullet, and such obstacles as fish-bones can generally be got down safely into the stomach by swallowing a large mouthful of well-masticated bread. In cases where this does not succeed in removing the bone, a medical man should be sent for, who can, by a very simple treatment, get rid of the obstruction.

The most serious obstruction is a set of false teeth, since the plate upon which they are fixed is apt to become entangled in the mucous membrane, and necessitate a serious surgical operation. The best way to avoid such an accident is for the wearers of artificial teeth on no account to go to bed with them in their mouths, since it is usually during sleep that the accident happens.

Foreign bodies, such as coins, often pass into the stomachs of children, and give unnecessary alarm to their friends. In the great majority of cases such articles would pass through the intestines without any treatment, but certainly the worst treatment possible is to give the child purgative medicine, as is so often done. Either an emetic of mustard and water should be administered at once, so as to bring up the foreign body, or, if the case is seen too late for this, every effort should be made to cover it over with more or less adhesive food, so that it may pass readily through the bowels. Pins or needles when swallowed should always be treated in this latter way. The best regimen for a child under these circumstances is plenty of bread and milk, with common hard dumplings and bread-and-cheese for his dinner, and a careful avoidance of fruit, etc., until the indigestible body has come away.

FRACTURES.—The treatment of broken bones is much too important to be entrusted to any but professional hands, but there are some points connected with the early care of such cases which may be advantageously insisted on.

The great majority of fractures are what is technically called "simple," *i.e.*, there is no wound of the skin communicating with the broken bone; the more serious cases, where there is a wound, and possibly laceration of the soft tissues of the limb, are termed "compound"; and when the bone is broken into several pieces, the fracture is said to be "comminuted." A "green stick" fracture commonly occurs in children in whom the bones are not fully ossified, and are still more or less cartilagenous. The bone in these cases is not broken right across, but bends and cracks up one side. The origin of the name is apparent. When a dry branch is bent it snaps right across with a clean fracture, but when a green twig is bent it gives and cracks on one side only.

In all cases of fracture it is most important to avoid all rough manipulation of the limb, lest the "simple" fracture should become "compound," by the end of the broken bone being thrust through the skin; and as the muscles or the limb itself, if excited to action, have a direct tendency to produce this undesirable result, the patient should not only abstain from all voluntary effort, but means should be taken to restrain all involuntary contraction of the muscles of the limb, as will be afterwards explained.

The immediate effect of a severe injury likely to produce a fracture is ordinarily a certain amount of faintness, and this need give no alarm if the patient is not losing blood at the same time. The only treatment required will be fresh air, with perhaps a little cold water sprinkled on the face, the head being kept low until the faintness has passed off, when a little brandy may be given if the patient continues exhausted.

There is very little difficulty in recognising the existence of a broken bone. The patient himself, if not insensible from the shock, has a pretty clear idea of what has happened. Take, for example, fracture of the thigh. The signs are unmistakable. In the first place, the patient falls down and cannot get up again. Then the limb is motionless and wobbles about in a decidedly unnatural condition, the foot falling over on its side, and declining to keep straight. The mark of the injury may be apparent at the seat of the fracture and there will be a swelling there from one end of the bone over-riding the other. If the ends of the bone are in opposition, they grate together, producing a peculiarly unpleasant sound and feeling which is technically known as "crepitus." Ladies who have "First Aid" Certificates usually delight in rubbing the ends of the bones together in order to "bring out" this symptom, but it is not conducive to the welfare of the patient.

In the case of a fracture "first aid" must be applied on the spot, and without moving the patient. Even should the accident occur in the middle of a crowded thoroughfare, you are not justified even in moving the patient to the pavement without applying an improvised splint. The first thing is to grasp the foot firmly, so as to prevent it from moving about. The foot is then to be pulled down until it is of the same length as the other, and the two feet are then to be tied together with a scarf or pocket-handkerchief, or anything else that may be available. A temporary splint should then be improvised, and almost anything that is stiff and long is available for this purpose. A broom handle is very useful, or a musket, or a stick or umbrella. In the football field the goal-poles come in handy, whilst in the streets two truncheons may be borrowed from the police. The support should be applied on the outer side of the broken limb, which should then be firmly bound to the sound limb, which will then act as a kind of natural splint and support on the other side.

The method of applying an umbrella splint calls for no detailed description.

The method of improvising a splint of two bundles of straw or twigs rolled in cloth or canvas is equally simple.

In the case of a broken arm the sufferer naturally supports the injured limb with the opposite hand in the position least painful to himself. When this is ascertained, and if there is any distance to travel before a surgeon can be seen, the arm should be supported by a handkerchief arranged so as to sling it, and also by a handkerchief or bandage bound—not too tightly—round the arm itself, so as to support the part. A piece of cardboard (such as is used for tying up gloves), or a piece of common hat-box four inches wide, may be advantageously placed on each side of the broken bone and secured with the bandage enveloping it. The patient may then be safely driven some miles in a carriage, a four-wheeled conveyance with good springs being preferable.

In the case of a badly-sprained ankle, or a crushed foot, it will be found convenient to carry the patient in a sitting or semi-recumbent position between two bearers.

In the case of a broken collar-bone place a pad in the armpit of the injured side, and push it upwards gently but firmly. The pad may be improvised out of a newspaper, or from a tennis ball and a lady's scarf, or a folded handkerchief, in fact from almost anything that is handy. Next fold a large handkerchief into a triangle, place the apex beneath the elbow of the damaged limb, lay the forearm across the chest, bring the lower end of the sling upwards of the forearm, and after fixing the pad tie the ends by a reef knot on the top of the shoulder, the knot being on the same side of the neck as the injury. Finally tie the limb to the side.

When the patient arrives at a place of safety medical aid should be at once summoned so that the broken bone may be set without delay. His clothes should be removed as far as necessary, and he should be placed on a good firm mattress. Anything like rough handling must of course be avoided. After the bones are adjusted a well-padded splint of wood, gutta-percha, or perforated tin or zinc, must be applied and kept in position with bandages and straps, the injured limb being carefully maintained in the position which affords the most complete relaxation for the muscles. Care must be taken to see that the bandages do not get too tight as the result of the limb swelling, or gangrene may result. The time during which immobility has to be maintained varies much in different subjects. In the case of a young man four weeks will probably suffice, but a considerably longer period will be necessary in a middle-aged person. The time may perhaps be shortened by putting up the limb in a "case" of plaster, starch, glue or poroplastic felt.

Compound fractures should always be treated antiseptically.

FROST-BITE.—The effects of cold, if severe, are scarcely less dangerous than those of heat, though not so frequently met with, in this country at least.

Probably the commonest form of frost-bite is the ordinary *chilblain*, and its close resemblance to a burn is shown by the fact of a vesicle forming and leaving a sore behind it just as if the part had been burnt. As the worst thing for a burn is to apply cold, so the worst thing for a frost-bite is to apply heat, and this is frequently seen in the case of people who put their cold feet to the fire, and so produce the chilblains of which mention has been made. A frost-bitten part loses its natural colour, becomes of a tallowy-white, feels numbed and insensible, and, if not judiciously treated, may mortify and drop off.

The proper treatment is to restore the circulation in the part, *very* slowly and gradually, and for this purpose friction should be used with the hand containing snow, or dipped in ice-water. The patient should be kept from the fire, and in an airy room, until the sensation in the limb, and its colour, are fully restored. When a limb is really severely frost-bitten, immediate recourse should be had to medical advice, as the patient may lose a part of it and hardly escape with his life.

A person who has been long exposed to a low temperature, particularly if either very young or very aged, or in feeble health, may be so completely overcome as to be in very considerable danger. The first evidence of this is a drowsiness, which becomes after a time perfectly irresistible, but which, if indulged, is surely fatal. Every effort should be made to rouse the patient, and to keep him awake until shelter is reached, when, if already passed into an insensible condition, medical aid should be at once summoned. In the meantime, the patient should be stripped and wrapped in a blanket, and friction of the limbs with the hands should be carefully and steadily carried on. A little warm milk may be cautiously administered with a spoon pushed well back into the throat, and, if an enema syringe is at hand, some warm water or milk may be thrown up into the bowels. Recourse should be had to artificial respiration, if the patient does not breathe freely. For instructions how to carry out this recommendation the reader is referred to the remarks on the treatment of drowning, a much more common casualty than severe frost-bite.

GATHERING, A, is a small abscess or collection of matter, and it may occur on any part of the body; the most familiar example is a "gathered finger," a complaint with which most of us are familiar. In these cases the painful part should be constantly fomented with hot water, keeping it in as long as possible. Poulticing with linseed meal is very useful, but it is essential that the poultice should be hot and changed frequently. The pain is generally worse when the hand is hanging down, and it is a good plan to support it on the chest by means of a handkerchief, keeping it up as much as possible. Sulphide of Calcium (Pr. 68) often proves useful in these cases. (*See also* ABSCESSES, Vol. I., page 192.)

GUNPOWDER ACCIDENTS, though similarly treated to burns and scalds, must be confided to professional hands, if possible. The effect of the explosion of gunpowder upon the patient differs according to the proximity and the force of the explosion. Loose or slightly compressed gunpowder, as in a "squib," scorches the patient by its explosion, and is apt to carry unburnt grains of the powder into the skin. These leave an ugly and almost indelible mark; for though it is true that the grains of powder may be picked out with a needle, few sufferers will endure the operation, which is necessarily painful. The explosion of tightly-compressed powder, as when contained in a powder-flask, is of a most violent character, and is sure to lead to such injury of the hand which holds it as to require immediate surgical attention. The accident is, in fact, only mentioned here in the hope that a hand may be saved by calling attention to the foolhardy feat which so often recurs with the same disastrous result—the pouring powder from a flask into an open fire. Of course a complete train is thus established from the fire to the flask, with the most dreadful results to the foolish performer of the experiment.

GUN-SHOT INJURIES, and particularly those occurring from the incautious use of fowling-pieces, are always most serious in their nature, and require most skilful professional treatment. As some time must ordinarily elapse between the occurrence of the accident and the arrival of the surgeon, it may be well to indicate the treatment to be pursued. In the first place, the bleeding should be arrested by binding up the wound in the manner already described. Secondly, as the patient will be certain to be suffering severely from "shock," it will be advisable to keep him in the recumbent position, to apply warmth to the extremities, and—if the bleeding has been controlled—to give stimulants cautiously.

We take this opportunity of calling attention to the folly—we may almost say wickedness—of pointing any weapon, whether believed to be loaded or otherwise, at another person in jest. Such jests have so frequently turned out to be miserable and irremediable mistakes, from the gun being unexpectedly loaded, that we very strongly maintain that from earliest childhood every boy should be forbidden to point even a pop-gun at a living person.

HÆMORRHAGE.—Bleeding, which is a constant accompaniment of cuts and wounds, is always very alarming to bystanders, and it occasionally happens that from want of knowing how to arrest it speedily and readily, serious results occur before the arrival of professional aid.

In order to be able to stop bleeding, the reader must understand that blood may be poured out in two ways—1st, it may be pumped out in jets of a bright red colour, in which case one of the *arteries* which convey the blood from the heart to the surface is wounded; or, 2ndly, it may flow out in a dark-coloured continuous stream from the *veins* which return the blood from the limbs to the heart.

It is evident, then, that the wound of an artery of large size gives rise to the most serious form of bleeding, and as the blood, in this case, is flowing from the heart to the circumference, we must arrest it by compressing the main artery between the trunk of the body and the wound. On the other hand, if the bleeding is from the wound or rupture of a large vein, the point for the application of the pressure will be either upon or *below* the wound.

In the case of the upper arm the principal artery runs along the inner side of the limb, where it may easily be felt beating, and in the case of arterial bleeding from the hand or arm, pressure can be efficiently maintained by tying a strong tape or handkerchief round the arm, and tightening it by twisting a stick in it on the outer side of the limb, as shown in the cut, Fig. 7.

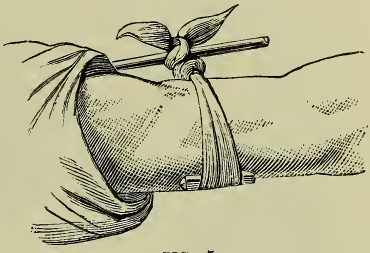


FIG. 7.

In the thigh the main artery runs down the middle of the front of the limb, and can be controlled in the same way as in the arm.

In both cases the introduction of a wine cork beneath the handkerchief in the situation of the vessel will lead to more efficient pressure upon it, and without so much tightening of the bandage as would be otherwise necessary.

This mode of extemporising what is surgically called a *tourniquet* is only for temporary employment, and any case in which the bleeding has been severe enough to require its use should be seen as soon as possible by a medical man, and the bandage should on no account be interfered with before his arrival.

Before explaining the mode of applying the dressings necessary to restrain hæmorrhage of an ordinary kind, it will be advisable to say a few words about bandages.

A bandage or roller is simply a strip of calico, six yards in length and from two to three inches in width. Soft unbleached calico or coarse cambric is the best for this purpose, but on an emergency any suitable material may be employed; and for binding up fingers broad tape or narrow ribbon is very convenient.

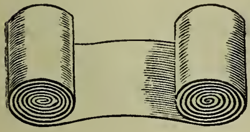


FIG. 8.

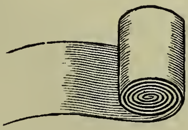


FIG. 9.

In order to use a bandage properly it must be rolled neatly and tightly from one or both ends, as seen in Fig. 8; but it is only the "single-headed roller" (Fig. 9), or that rolled from one end, which will be required in domestic surgery. A bandage may either be rolled by keeping it tight with the thumb and fingers of the left hand, whilst being rolled with the right, as shown in Fig. 10; or this may be more conveniently and rapidly done by using both hands for rolling, whilst the bandage is kept on the stretch by an assistant, as shown in Fig. 11.

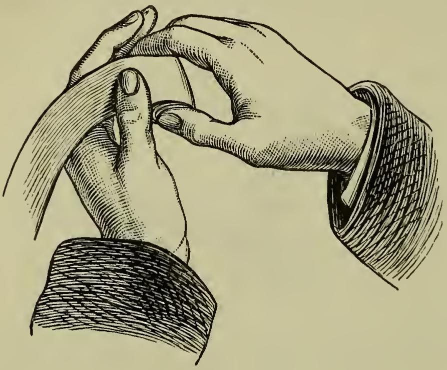


FIG. 10.

In bleeding from slight cuts about the fingers and hand, plaster (either court or adhesive) may be conveniently employed if a bandage is applied over it until the plaster becomes firmly fixed. When the wound is considerable other means must be employed. A piece of lint or soft linen should be placed over the wound, and over this a bandage should be firmly applied, and should extend a little above and below the seat of the injury.

In the case of a finger a roll of tape may be taken, and ten or twelve inches being drawn out and left loose, the finger should be rolled in a series of spiral turns from the web to the nail, where the spiral arrangement being reversed, the tape can be carried up again and across the back of the hand, and tied round the wrist with the end left out, as in Fig. 12.

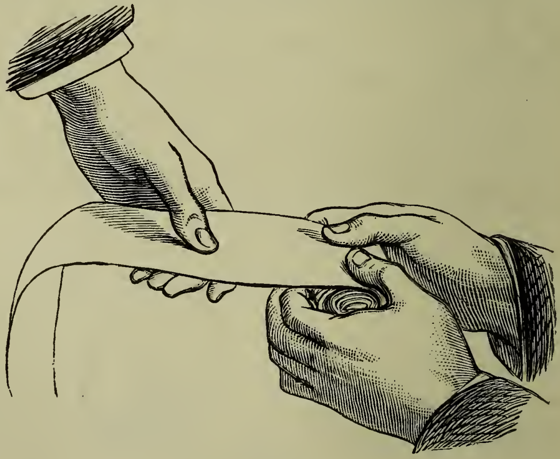


FIG. 11.

If the wound is in the ball of the thumb the bleeding is usually so severe as to necessitate medical attendance, and this should be obtained with the least possible delay, although the vulgar fear of "lock-jaw" from an injury of this kind is unfounded.

When it is necessary to bind up the thumb, the broad tape may be conveniently used, and, a turn having been taken round the wrist to fix the bandage, a series of figure-of-8 loops around the thumb and wrist should be made, beginning as low down on the thumb as necessary, and making each fold of the bandage overlap that which precedes it, as shown in the illustration, Fig. 13.

Wounds of the palm of the hand, if severe, should be immediately seen by a surgeon, but as a temporary measure a slice of cork wrapped up in a piece of linen may be firmly bound upon the bleeding point with a bandage. This should be applied in figure-of-8 loops around the wrist and hand, being made to cross at the point where the pressure is required, as shown in the illustration, Fig. 14, and this should be repeated a few times so as to control the bleeding. It may be advisable where assistance is not readily obtainable, to bandage the fore-arm in addition, and this may be done by carrying the bandage once or twice round the wrist alone, and then proceeding up the arm, turning down the bandage in the manner shown in the illustration, Fig. 15, when the shape of the arm does not allow it to lie flat and close upon the injured limb.

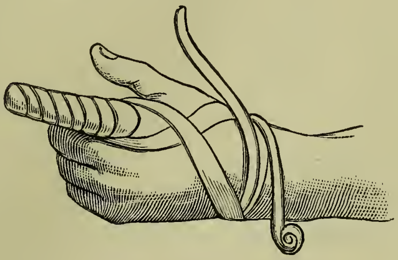


FIG. 12.

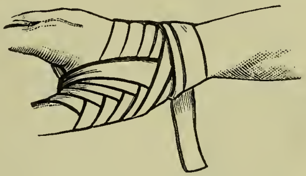


FIG. 13.

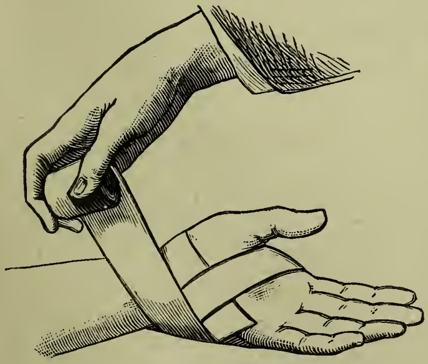


FIG. 14.

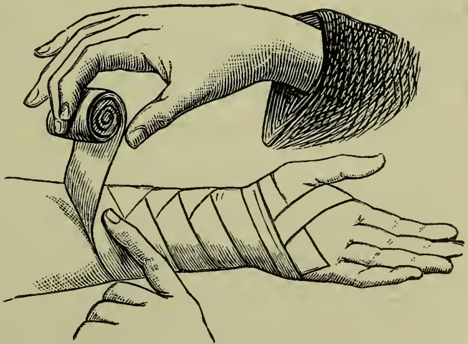


FIG. 15.

In all cases of bleeding from the hand or arm it is important that the limb should be kept quiet, and in a raised position. For this purpose, and for many others, a sling is most conveniently made of a silk handkerchief, which should be folded like a cravat, and of a convenient width. The limb being placed in the loop of the sling, the front end is to be brought forward over the opposite shoulder, and the other end over the shoulder of the same side to meet it at the back of the neck, as seen in the illustration. In this way the arm will be drawn forward, and can be easily raised to any height, and the sling will not slip as it always does if tied in the opposite way (Fig. 16).

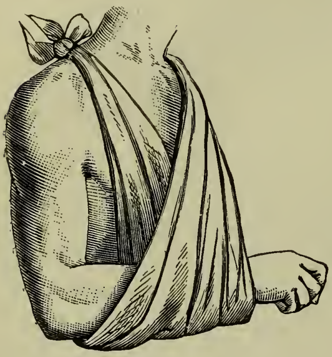


FIG. 16.

Bleeding from cuts about the face is seldom serious, unless the lip should be divided by a blow upon the mouth, in which case a surgeon should be immediately consulted, or the resulting deformity may be great. Collodion is a useful application to cuts about the face, and in applying it the part should be firmly pinched with the fingers for a few moments, so as to stop the bleeding, then having been wiped dry, the collodion may be painted on, and after a few minutes, when it has dried, the part may be released from the fingers. Court plaster may be applied with the same precautions, care being taken that both sides of the plaster are thoroughly wetted, without removing the adhesive material.

In extensive cuts upon the face it is advisable to have recourse to stitches of silk, in order to reduce the resulting scars to a minimum. In cases when the assistance of a medical man cannot be obtained, an ordinary stout sewing needle, with purse-silk or stout cotton, may be pushed through the whole thickness of the skin on each side of the cut, and an eighth of an inch from the margin, and the silk being tied in a double knot when the loop has been drawn tight, so as to bring the edges together. One stitch will be required for a cut an inch long, and so on in proportion; and a strip of plaster should be put across the wound on each side. Stitches should not be left in the skin of the face more than two days, and should then be cut close to the knot with a sharp pair of scissors, and drawn out gently. Narrow strips of plaster applied across a wound, and slightly overlapping one another, will, in many cases, obviate the necessity for stitches.

In wounds about the head, the hair on each edge of the wound should be cut away, a pad of lint placed over it, and bound on firmly with a bandage. The bandaging will vary somewhat, according to the position of the cut, but will consist essentially of one or two turns round the front and back of the head, secured with a pin, and followed by a turn beneath the chin and over the top of the head, which will keep the other tight, as in the illustration (Fig. 17).

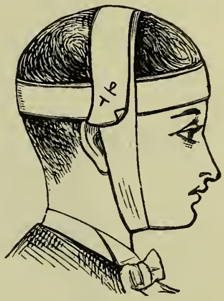


FIG. 17.

The trunk and lower limbs are seldom wounded, unless the injury is a severe one, which would necessitate immediate medical attendance. Before this arrives, the only assistance bystanders can give is to stop any bleeding, either by making pressure upon the bleeding spot, or by encircling the limb with a handkerchief tourniquet as already described.

HANGING.—Cases of hanging with suicidal intention are unhappily met with, and require treatment very similar to that appropriate for drowned persons. The first step is to cut the sufferer down, and loosen the ligature round the neck. Cold water should then be dashed over the head and chest, and if no breathing is thereby excited, recourse should be had at once to artificial respiration, as above described. In cases of hanging it may be necessary to bleed the patient from the jugular vein, or temporal artery, in order to relieve the congestion of the head, but neither of these operations can be safely undertaken except by a medical man.

HIP DISEASE is only mentioned here because its onset is so insidious as often to be overlooked until the disease has made considerable progress; and as treatment, to be efficacious, must be early, it is important that parents should have their attention called to the first symptoms of the disorder. The disease generally occurs in weakly children, and may date from a fall which gave rise to no special symptoms at the time. The child is noticed to have a slight limp, and complains very probably of pain in the *knee*, and not in the hip itself, unless that part is touched. These symptoms are quite sufficient to justify recourse to the surgeon, whose directions should be strictly carried out for many weeks, or even months, if necessary, to effect a cure.

HOUSEMAID'S KNEE is, as its name implies, an affection common among domestic servants who kneel to scrub floors, etc. The little bag, or "bursa," beneath the skin of the knee and in front of the knee-cap is apt to get inflamed and swollen from the pressure it sustains, and is then often very painful, and the part looks red and swollen. Hot fomentations and poulticing, with rest for a day or two, will generally effect a cure; but if not, and the part throbs, the advice of a surgeon should be at once obtained, as possibly an abscess may have formed. In some cases there is no pain or heat, but a swelling is formed in front of the knee (as seen in Fig. 18), which gives inconvenience in kneeling. This will often subside by avoiding the practice which has given rise to it, and by painting the skin over it daily with tincture of iodine; but if it does not disappear it should be shown to a medical man. In all cases in which it may be a matter of necessity that work should be continued as usual, the sufferer should be very careful to provide herself with a soft pad of carpet, or matting, to kneel upon, to prevent, if possible, any increase of the inflammation.

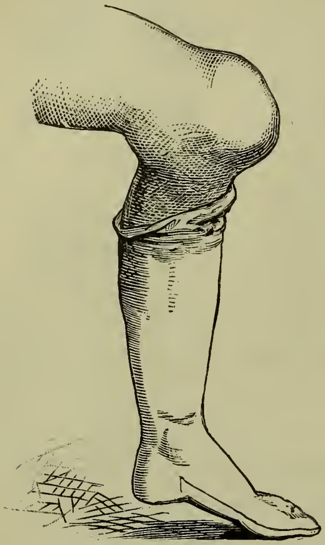


FIG. 18.

INCONTINENCE OF URINE IN SLEEP is very common among weakly children, and is often the cause of great suffering to a child at school, where he is punished for what he is quite unable to help. Careful supervision will often effect a cure by avoiding too long intervals of unbroken sleep, and the use of a night-light will obviate the fear of rising in the night or early morning, which is often a cause of the disaster. As this affection may be only the evidence of more important diseases, it will be well to have medical advice if the occurrence appears to be becoming habitual. The opposite condition of things—retention of urine—is much too serious an affection to be treated domestically, and immediate surgical attendance should be obtained for it at whatever age it may occur. (*See also* BED-WETTING, Vol. I., page 26.)

INGROWING TOE-NAIL is another result of sacrificing health and comfort to fashion, in the form of tight boots. The great toe-nail, when healthy, is very slightly curved, and is broad and thin; when, however, the toes are crushed together, the nail of the great toe becomes more curved than natural, and presses into the tender skin on each side, and if the slight inconvenience at first experienced does not warn the sufferer to seek relief, he will find matters rapidly going from bad to worse, inflammation being set up on each side, and exuberant painful granulations springing up and overlapping the edges of the nail, as seen in Fig. 19, which contrasts very unfavourably with the natural foot, as seen in Fig. 20.

In the early stage of this disorder, when the nail first begins to excite irritation, the immediate abandonment of narrow boots and the careful insertion of a small pledget of cotton wool in the groove on each side of the nail will generally effect a cure; but it this is not enough, with a sharp pair of nail-scissors a small slip of the nail on each side should be removed, without going down to the *matrix*, or "quick." In many persons this occasional removal of a slip of nail is a necessary and painless operation, though some prefer to scrape away the centre of the nail, so as to thin it until it bends readily, which in our experience is both a painful and useless operation.

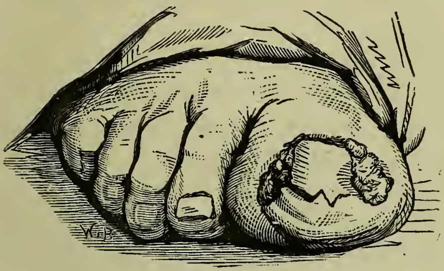


FIG. 19.

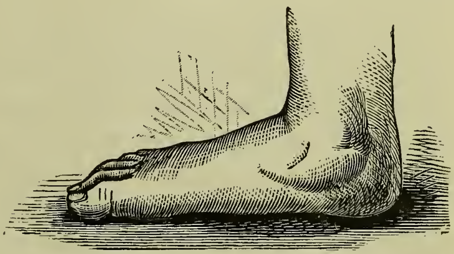


FIG. 20.

A better plan is to let the nail grow long and to cut a notch in the centre of it—as shown in the illustration, Fig. 19—when the growth takes place chiefly at this spot, and the edges do not appear to encroach so rapidly upon the soft tissues. When the irritation has been allowed to go to the extent which we have shown in the illustration the advice of a surgeon should be immediately sought, as it may possibly be necessary to remove part of the nail in its whole length—an excessively painful operation, for which the administration of chloroform, or some other anæsthetic, will be found necessary.

INJURIES FROM CHEMICALS are comparatively rare accidents, though they may prove most serious in their results. The application of any of the strong mineral acids—nitric, sulphuric, or hydrochloric—to the surface of the body will char the cuticle, and, if not immediately washed off, or neutralised with an alkali—soda, potash, or lime—will eat into the part, giving rise to excruciating pain and destruction of the tissue. In the same way, the application of the *caustic* alkalies will destroy the surface, and require to be neutralised with some diluted acid, of which vinegar is a convenient form. The most serious form of accident from chemical substances is when they are swallowed by mistake, and these cases require immediate and active medical treatment. Pending the arrival of a medical man, no harm can be done in any case by administering olive oil or uncooked eggs, but the surgeon will of course use his discretion as to the means to be subsequently adopted.

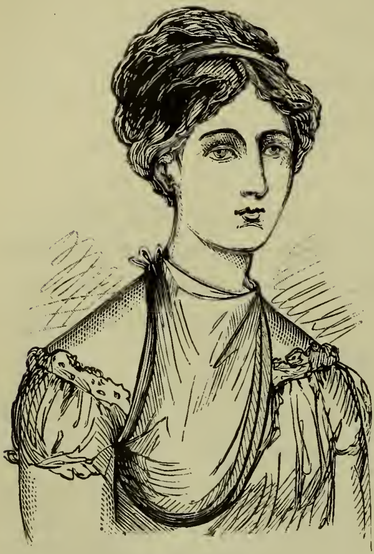
Particles of quicklime are occasionally blown into the eye, and produce very serious mischief if not immediately attended to. Since it is the contact with the tears which produces the caustic effect, it is of no use to merely bathe the eye with water, and fortunately an antidote is at hand in vinegar, which, when mixed with water and applied to the eye, produces an insoluble salt of lime, and arrests the mischief. When all pain has been allayed by the use of the vinegar and water, a drop of castor oil placed between the lids will give great comfort to the patient; but medical advice should be sought if there are, as will frequently be the case, white marks left upon the surface of the eye-ball.

KNOCK KNEES occur generally in youths who have somewhat overgrown their strength, and particularly in those who have been in the habit of walking or running a good deal. The ligaments of the knee-joints become weakened and gradually yield, and the lad finds that the knees are apt to touch in walking, causing the trousers to wear out on the insides of the legs, and giving to the individual a very ungainly appearance, with more or less pain in the knees themselves. The patient's health should be improved, and he should avoid walking; but if able to obtain horse exercise may avail himself of it with advantage, as it will tend to bow the knees out, as is seen in an exaggerated form in grooms and jockeys. With the same object in view, he may sleep with a pillow between his knees, and with the ankles fastened together by a silk handkerchief. A simple alteration in the sole of the boot is very useful in slight cases of this kind. It consists in having the heels of the boots prolonged on the inner side along the "waist" of the boot, the effect of which is to throw the foot slightly on one side, and thus counteract the in-bowing of the knees; the boots should be strong lace-up ones, so as to well support the ankles, which might otherwise yield. In severe cases of knock knee, it will be necessary for the patient to be confined to the sofa, and wear proper apparatus under the direction of a surgeon.

MILK ABSCESS is one of the most common forms of abscess, and is met with in mothers who either have been obliged to wean their child suddenly, or who suffer from "sore nipples" which incapacitate them from nursing. Sore or chapped nipples are more apt to arise after a first than after a subsequent confinement, and may be generally avoided by taking the precaution to harden the nipple by bathing it with weak brandy and water for a few days before the birth of the child. If the nipple is very much flattened, it should be drawn out with a breast-pump or glass, or a healthy child of a few months old may be put to the breast as soon as there is any milk. When the nipple has unfortunately become sore, the best plan is to protect it with a nipple-shield of glass, and to dry it thoroughly after being used. Almost any stimulating lotion will then effect a cure: borax, alum, or white vitriol, in solution, are all favourite remedies; but perhaps the most successful is the application of a solution of nitrate of silver (two grains to the ounce of water) with a camel's-hair brush, three or four times during the day.

When from any cause a mother is unable to nurse her child, the breast is apt to become gorged with milk, and unless this is got rid of, inflammation and abscess are pretty sure to follow. By the use of the breast-pump, or gentle and equable pressure with the hands, much relief can be afforded, and attention must then be directed to diminishing the flow of milk to the breast by rubbing it with warm sweet oil, or better, by smearing it with extract of belladonna mixed with equal parts of glycerine. At the same time the diet of the patient should be reduced, and a dose of Epsom salts given every morning.

A milk abscess may often be averted by keeping on the inflamed portion of the breast a rag constantly wetted with spirit or eau-de-Cologne and water, which should be allowed to evaporate, particularly if the breast is well supported in a sling, arranged as follows:—A large handkerchief being folded so as to form a triangle, should be applied obliquely across the chest, with the straight part immediately below the breast, one end passing over the opposite shoulder, and the other through the armpit of the same side, and the two being tied behind the back. The handkerchief being now slightly unfolded, can be made to support the breast comfortably at any height desired, and the top corner can be brought up over the shoulder, and fastened round the neck, as shown in the illustration. But if an abscess unfortunately forms, as will be known by the occurrence of a shivering fit and the throbbing pain in the breast, the advice of a surgeon should be immediately sought, if it has not been before, in order that he may give relief by an early incision. The patient is often so much reduced by the pain she has undergone as to be unable to nerve herself to sustain this operation, unless her friends are firm in supporting the surgeon in doing his duty. A milk abscess, like any other, may, as already mentioned, break under prolonged poulticing, but only at the expense of great suffering and very considerable permanent damage to the breast.


MILK ABSCESS.

NÆVUS, PORT-WINE STAIN, MOLE, MOTHERS' MARKS.— Nævi are too familiar to need description. They are congenital, and are met with of all shapes and sizes. They are called "Mothers' Marks," from a supposition that they are produced on the child before birth through some fear or fancy on the part of the mother. Sometimes they are called "cherry stains," "strawberry marks," and so on, from their apparent resemblance to the stain of some fruit. When they are covered with hair they are called "mouse marks." Usually they cause no inconvenience, except the deformity they may produce, but occasionally they get sore and give some trouble. Often enough they die away without any interference. It is always a nice question to decide whether they should be let alone or whether an attempt should be made to remove them. On this point it will be necessary to take the advice of a doctor. It may be laid down as a general rule—to which, of course, there are exceptions—that if they are small, if they occasion but little disfigurement, and if they exhibit no tendency to increase in size, they are best let alone; whilst, on the other hand, if they are large, if they are so situated as to cause disfigurement, or if they are increasing in size, it will be necessary to do something.

PENETRATING WOUNDS of a slight character usually arise from the incautious use of common articles of domestic use, such as an ordinary sewing-needle, a crochet-needle, or a fish-hook. The ordinary needle, if buried beneath the skin of the hand or other part, may be readily extracted if so situated that both ends can be felt. In that case it is only necessary to press the end nearest the surface through the skin, when it can be easily withdrawn.

If, however, as more frequently happens, only one end can be felt, and it is uncertain what length of steel is in the tissues, attempts to force the needle out lead generally to its being buried deeper; and it is better, therefore, to have recourse to medical advice at once, in order that the surgeon may, if he think it advisable, cut down upon the foreign body. Operations of this kind, though apparently trivial, should never be undertaken by amateurs, since the hand is too important an organ to be cut into lightly by one unacquainted with its anatomy; and, besides, there is usually no great urgency in the case, and the needle may very well be left alone until, in process of time, it makes its way to the surface, as it is pretty sure to do.

Crochet-needles are more difficult to manage than ordinary needles, owing to the hook at one end. If merely driven accidentally into the skin, the wound may be cautiously enlarged with a lancet or sharp and clean penknife, so as to allow of the withdrawal of the barb; but if deeply embedded in a finger, or, as has happened, in the tongue of a child, it will be necessary to push the point through in order to cut the hook off with a pair of wire-pliers, and for this medical assistance should be obtained.

Fish-hooks are to be treated on a similar plan, except that the disciple of Walton, being generally alone and at a distance from all surgical aid when the accident happens, must be content to cut the line from the mischievous hook, and having forced the barb through the nearest point of skin, should withdraw the hook through the wound thus made.

PILES are often a very troublesome and painful affection, and are of various kinds, each of which requires a different treatment, for which a surgeon should be consulted. They are mentioned here principally in order to impress upon those who suffer from them and go on for years bearing pain, or even having their health undermined by constant loss of blood, that their disease is curable, and that they should not allow feelings of false delicacy to prevent their applying for relief. As a temporary means of relief, a sufferer may regulate the bowels with occasional doses of "lenitive electuary," and may employ an enema of cold water. Habitual sufferers from affections of the bowels frequently derive very great comfort from relieving the bowels at night rather than in the morning, so as to obtain some hours' rest in the horizontal position after an evacuation. (*See also* PILES, Vol. II., page 317.)

POISONED WOUNDS.—The form of poisoned wound most familiar in domestic surgery is in the finger of a cook who has pricked herself whilst trussing game or cleaning fish. The slight prick, which is not noticed at the moment, becomes painful in the course of a few hours, when the finger becomes hot and swollen, and a red blush is seen to be extending up the finger to the hand.

This state of things, if taken in time, may be effectually checked by the application of a wetted stick of lunar caustic over all the inflamed surface, and for some little distance beyond it. The caustic causes a smarting pain, and turns the finger black, but this wears off in a few days. A solution of caustic answers as well, or even better than, the solid caustic in these cases, and the ordinary "nitrate-bath" of photography, to be found in so many houses, is very good for the purpose.

Instead of the inflammation spreading in the above described way, it may be concentrated in the wounded spot and give rise to a whitlow. In this case, fomentation of the whole hand, hot linseed-meal poultices, and support in a sling, will be the proper treatment; but if matter forms, it will probably require an incision, in order to save the finger, and therefore early recourse should be had to a surgeon.

Bites of animals may give rise to poisoned wounds, without there being any risk of hydrophobia; and this is seen in the case of pet dogs, cats, squirrels, etc. The same treatment as for ordinary wounds, followed by that indicated for poisoned wounds, if occasion arises, would be proper in such cases. When there is the least reason to fear hydrophobia in the animal which has bitten, every precaution should be taken, which should include thorough cauterisation or extirpation of the wounded part; but this it is impossible for a non-medical person to carry out effectually.

The bite of the adder is the only example of snake-poison met with in this country, and its effects, though serious, are not ordinarily fatal. In order to prevent, as far as possible, absorption of the poisonous material into the system, a string should be tied tightly above the wounded spot, which should be well sucked, the operator taking care to rinse his mouth out with a little brandy and water, and not to swallow any of the poison. After this, hot fomentations and a poultice will be the proper treatment. If the poison has spread up the limb it gives rise to great swelling of the part, and this may even extend to the trunk. Friction with warm oil is the best remedy for this state of things, but it often does not subside for some days.

The stings of wasps or bees are painful, but not dangerous, unless some vital part, such as the inside of the throat, is stung. The stings, which are often left in the part, should be extracted with fine forceps or tweezers, and the smarting pain may be allayed by a little moistened carbonate of soda being laid over, or some sal volatile and oil rubbed on the part.

PROLAPSE of the bowel in children should be gently returned after sponging with cold water. It may be simply the result of debility, or may be a symptom, in boys especially, of a much more serious affection —stone in the bladder—and the advice of a surgeon should therefore be obtained.

RUPTURE or HERNIA means the protrusion of a small portion of the bowels through an opening in the groin or at the navel. It occurs in children from violent efforts in crying, and in older persons from lifting heavy weights, coughing, etc. If a mother notices any swelling in the neighbourhood of the groin in her child (boys being much more liable than girls to this affection), she should lose no time in consulting a medical man, and ascertaining whether this is due to a rupture or to some other disease.

In order to effect a cure of a rupture, it will be necessary for the child to wear a properly-fitted truss for some months, and it will be worth a mother's while to pay every attention to this matter, so as to bring about a cure as soon as possible. It is not necessary that a truss should be worn at night, except in the case of an infant who cries as much at night as in the day, but the mother should see that the child never runs about before the truss is put on in the morning, and must be particularly careful to see that the rupture is pushed back thoroughly before the truss is applied, which is most readily accomplished when the child is lying down. It is convenient in children to cover the truss with a linen cover, which can be changed when soiled, and the greatest care must be taken to prevent the instrument chafing the skin by powdering it thoroughly.

In grown-up persons the occurrence of a hernia is of even more importance than in children, since it is more likely in them to become "strangulated," *i.e.*, it cannot be pushed back by the patient himself; obstruction of the bowels results, and this is followed by vomiting, and even by death, unless promptly relieved by the surgeon. In any case, therefore, where a rupture cannot be returned, or when after any exertion a lump has appeared in the groin, the advice of a surgeon should be sought. It unfortunately happens every now and then that a patient suffering from the bilious vomiting caused by a strangulated hernia conceals the real cause of the disease, either from ignorance of the connection between the two affections, or from a feeling of false delicacy. No one is justified in trifling with his or her own life in such a matter, and a medical man will rightly insist upon making the necessary examination if his suspicions are aroused by the symptoms, as they probably will be.

When a surgeon finds that he is unable to return a rupture, it will be necessary for him to perform a slight operation in order to save the patient's life, and neither patient nor friends should have any scruple in consenting to this being done at once.

Every minute is of importance in these cases, and though it is perfectly true that patients die after the operation for strangulated hernia, it is equally certain that they die in consequence of the operation having been delayed too long, rather than from the proceeding itself.

SPINA BIFIDA, a term derived from *spina*, the spine; and *bifida*, cleft, is a congenital malformation, with arrest of development of some portion of the spinal column. There is a tumour or swelling which may exist in any part of the spine, but is commonly met towards its lower extremity. When first observed it is usually about the size of a walnut, but it gradually increases in size. It is filled with fluid and fluctuates on the application of pressure. It is not infrequently associated with enlargement of the head or club foot. The children suffering from this infirmity usually die at an early age, unless operative procedures are resorted to at the first available opportunity. Cases are sometimes cured by tapping, and by the injection of some stimulating fluid such as tincture of iodine. It need hardly be said that good surgical advice is imperatively demanded.

SPINAL CURVATURE.—The vertebral column is a complex anatomical structure made up partly of cartilages connected together by strong ligaments. Sometimes the bony structures are attacked by caries or necrosis, in much the same way that teeth decay. The cartilages usually undergo simultaneously a process of ulceration, the result being that matter is formed. The symptoms of this condition, which is known technically as Pott's disease, are often at first very ill-defined, and much difficulty may be experienced in forming a correct opinion as to the nature of the malady. There is usually pain on movement, accompanied by want of flexibility in the stooping position. The patient usually moves slowly and cautiously, and usually endeavours to relieve the spine of the duty of supporting the upper part of the body by sitting with the arms extended and the hands resting on a chair. On gently striking the spine with the knuckles of the closed hand marked tenderness may be detected over some one particular region. After the lapse of some months the exact nature of the disease usually becomes only too apparent, the spinous processes projecting and producing a very distinct curvature. An abscess may then form and make its way to surface in the loins or some other part of the body. The treatment is extremely complex, and will be partly local and partly constitutional. The strength of the patient will have to be supported by all available means, whilst something of the nature of a mechanical apparatus will have to be devised. A common method of treatment is to put the patient in a plaster of Paris jacket. A surgeon will have to be consulted, and it need hardly be said that it will not suffice to leave the arrangement of the details to an instrument maker.

Lateral curvature of the spine occurs very commonly in children, and is much less serious than angular curvature. It is partly constitutional in character and arises partly from various bad habits, such as the practice of constantly standing on one leg. Children who are kept too closely at their lessons, or who are taught to write in constrained positions often suffer. The curvature is often distinctly seen on undressing the child and examining the back. The tendency of the disease is to get well under favourable hygienic conditions. Plenty of good food with cod-liver oil, extract of malt, iron, phosphorus and lime, are important adjuncts in treatment. The patient should be sent to a good bracing sea-side place, and should be encouraged to spend most of the day in the open air. Boating, rowing, swimming, lawn tennis, dumb bells, and fencing, are all useful. Lessons should be abandoned and many months should be devoted to the restoration of the condition of the muscles and other parts which have lost their tone.

Many years ago delicate girls whose spines were supposed to be weak were made to rest many hours daily on what was known as a "reclining board." Whether this instrument of torture still exists in remote parts of the country it is difficult to say, but at all events its use prevailed for many decades. It could not by any possibility be of the slightest service, and was probably an important factor in devoting many girls to a life of invalidism. What is needed in these cases is plenty of out-door exercise, which may well assume the form of amusement. Lawn tennis, boating, dancing, and cricket are the best medicines.

SPRAINS.—A severely sprained ankle is a common, and at the same time a serious, accident. As it is very possible that the accidental twisting of the foot to one side may have broken the small bone of the leg near the ankle such a case should always be seen as soon as possible by a medical man. But if the sprain is of a sufficiently slight character to be treated domestically, it should be borne in mind that complications may occur at a later period, for which medical advice should not be too long delayed.

In the case of a sprained ankle, it is of the first importance to get the boot off before the swelling, which invariably follows, has come on. If the accident has happened at a distance from home, the foot should then be firmly bound up with a bandage applied round the ankle in a series of figure-of-8 loops, and the foot kept in an elevated posture during the conveyance of the patient to his house. On reaching home, the bandage is to be removed, and the foot assiduously fomented with water as hot as can be borne, until the pain is relieved, some tincture of arnica or poppy-heads being useful adjuncts to the fomentation.

The application of leeches to bad sprains is often of service, but it is not safe to have recourse to them without medical sanction.

The use of cold applications to sprains, though popular, is not to be recommended. The cold lowers the vitality of the part, and tends to prevent the very repair which it is our object to bring about.

Support and rest are the points to be insisted on, and these are most readily obtained by strapping the joint firmly with adhesive plaster, so that no movement of the ankle is possible. In order to do this it is necessary to have a yard or two of good "strapping" or "soap plaster," so that the pieces required may be cut "in the length" of the calico. Strips long enough to encircle the foot and cross by some inches, are to be cut, and must be thoroughly warmed, one by one, either by holding them with the plain side to the fire, or, better, by plunging them for a moment into a basin of hot water. The foot being then brought to a right angle with the leg, and supported on the heel at a convenient height, the strips of plaster are to be applied as follows:—Beginning near the roots of the toes, the first strip is to be passed beneath the sole, and the ends crossed over the instep, and each strap is to be placed nearer the heel, and to overlap its predecessor for about half its width. When half a dozen straps have thus been applied, another series is to be made to pass around the upper part of the joint horizontally, crossing the first set on the instep, and thus the whole joint will be supported and compressed, and the patient will be able to get about (Fig. 21). A bandage should be applied over the plaster, to keep it from slipping. In a couple of days the plaster will have become loose, owing to the subsidence of the swelling, and must be renewed, the old plaster being most easily removed by slipping the blunt end of a pair of scissors beneath it on one side of the foot, and dividing it so that it can be taken away in one piece. For a sprain of moderate severity the plaster will require renewing three or four times; but even when its use is abandoned, it will be advisable to employ a bandage or an elastic "foot-piece" for some time, as the foot will still require support.

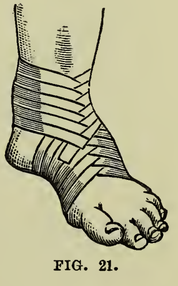


FIG. 21.

A sprain of one of the larger joints, and especially of the knee, is a serious injury; and if any severe symptoms show themselves, immediate recourse must be had to medical aid. When a knee merely gives way occasionally under a person when walking, and there is no swelling or heat about the part, it will often be of service to support the joint with a knee-cap, which may be of elastic material, and is better made to lace up than to draw over the leg. When the joint continues weak for some time, it may be advantageously treated like an ankle by strapping, the plaster being cut long enough to go once and a half round the joint, and about an inch in width. The straps are then made to overlap in regular series, from below upwards, crossing in front until the joint is completely covered, as seen in the illustration (Fig. 22).

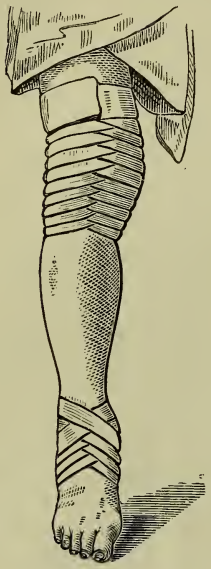


FIG. 22.

A *Strain* is much the same as a sprain, except that it does not necessarily occur in the neighbourhood of a joint. It consists in the tearing of some tendinous or muscular fibres, and is generally the result of some violent and unwonted exertion. The treatment consists in obtaining rest and support for the part by careful bandaging, the use of a sling, etc.

The term "a strain" is sometimes applied by the lower classes to the occurrence of a rupture or escape of a piece of bowel from the cavity of the belly. If any swelling should be noticed in the neighbourhood of the groin after some exertion or athletic exercise, a surgeon should be immediately consulted, as the case may be a serious one, and delay be a matter of life or death.

STARTED NAVEL.—This is a not uncommon affection in young children, and if not properly attended to will lead to the formation of a rupture. The treatment consists in preventing the protrusion from taking place until the parts are in process of time restored to their natural condition, and this can only be effected by care and attention on the part of the nurse and mother. The child being laid on its back, and the protrusion carefully returned with the finger, a pad made of a slice of a wine-cork half an inch thick, or a farthing, should be wrapped in a piece of soft linen and applied over the spot, and bound on firmly with strips of plaster half an inch wide. The strips of plaster (the common white strapping) should be about twelve inches long, and should be arranged star fashion; they should be dipped in hot water in order to warm them, as they then stick much more firmly than if held to the fire. A roller of linen or fine flannel should be applied round the infant's navel over this. In cases of larger protrusion either in children or grown-up persons, a suitable abdominal support should be procured from an instrument maker, and should be worn with the same precautions as have been given for the use of a truss.

STINGS OF INSECTS.—The bite of the domestic flea or bug can hardly be said to require treatment, unless the patient is a child with very delicate skin, in which case numerous bites may set up a good deal of irritation, and require the application of Goulard water or a weak gin and water lotion.

The single bite of the bee or wasp is painful for a time, and may be best relieved by the application of an alkali, such as ordinary washing soda, or the more elegant bicarbonate of soda, or a drop of sal volatile. The domestic "blue-bag," used for colouring articles in the wash, has a great reputation as a local application, and deservedly so.

The infliction of a large number of bites by either wasps or bees is a serious matter, and death has followed such an accident. This result is due partly to the amount of poison absorbed, but more probably to the "shock" inflicted on a nervous patient by the sudden attack of a swarm of insects. In such a case the application of olive or almond oil will be the most soothing application, and then care must be taken to extract the stings which may have been left by the insects. The prostration of the patient will be best met by the administration of diffusible stimulants—sal volatile, brandy, or champagne—but the advice of a medical man should be sought without delay.

The sting of the adder is the only common accident of the kind met with in this country. The treatment consists in tying a string tightly round the limb above the wound in order to prevent absorption of the poison, and subsequently in the extraction of the poison by sucking the wound. The limb bitten commonly swells considerably, and friction with warm oil is useful in relieving the pain. The vital powers are severely and rapidly depressed by the absorption of the poison, and must be supported by the free administration of ammonia, ether, brandy, etc.

STYE IN THE EYE, A, is a little abscess formed at the edge of the eye-lid by the inflammation of one of the little follicles which lubricate its edge. It generally occurs in persons out of health, or in strumous children, and is apt to occur again and again until the health is improved. At the commencement of the disorder the part is sure to be swollen and red, and feels hot and uncomfortable to the patient; then it begins to throb, and matter forms, as is shown by the yellow point in the centre of the "stye." When this is let out, or discharges itself, the inflammation subsides, and the lid gets well rapidly. In the early stage the only treatment is to bathe the eye frequently with hot water, and at night to put a bread and water poultice over it. When the matter forms it may be pricked and let out with a needle, if the patient will be steady enough to allow this to be done without danger to the eye, though there is a popular but unfounded prejudice that any interference with a stye leads to the formation of others.

The formation of an abscess on the inner side of the eye, close to the nose, is a much more serious thing, as it involves the passage by which the tears reach the nose, and will require early and careful surgical treatment, or a very disfiguring scar may result.

SUFFOCATION.—Suspended animation from foul gases is most commonly met with in connection with breweries, where the carbonic acid gas is apt to collect in the large vats used for brewing; or in wells, where the same gas collects and is dangerous to workmen descending to repair pump-tubes, etc.

As in these accidents several lives are often unnecessarily sacrificed in the well-meant but ignorant efforts made to rescue the first sufferer, it may not be out of place to say a few words as to the best method of dispersing the noxious gases, and removing those who are suffering from their influence. When one man has fallen insensible under the influence of the carbonic acid, it is simply suicide for another to attempt to rescue him without proper precautions. These consist in having a strong rope securely fastened round his waist, so that he may be drawn up at once if overcome, and *another* similar rope to be carried in the hand and to be attached to the first victim. The mouth and nose should be thoroughly muffled with a woollen comforter or handkerchief, and the rescuer should breathe as seldom as he can whilst attaching the rope to his fallen comrade. If sufficient assistance is at hand, efforts should at the same time be made to disperse the carbonic acid gas by throwing down buckets of water. By this means the ordinary atmospheric air will to a certain degree be mixed with the deleterious vapour, which, being heavy, will speedily find its way through an opening in the bottom of a vat, if such can be rapidly made by opening a trap, or cutting out a plank. A garden-engine and hose, if at hand, may be used to pump fresh air to the sufferers, and a fire-engine, if obtainable, would be a still more efficient instrument.

When the sufferer is at last placed in safety, every effort must be made to establish respiration in the manner already explained under the head of drowning. It is most important that a free access of fresh air should be allowed to him by avoiding all crowding of anxious relations and friends around the patient.

SUSPENDED ANIMATION.—Under the head of suspended animation are included all those cases of apparent death in which, by the judicious application of appropriate remedies, the patient may be restored to vitality and health.

The simplest form of suspended animation is that seen in *fainting*, when, from the effects of heat or over-exertion (combined possibly with tight lacing), a young lady becomes pale, falls down insensible, and appears scarcely to breathe. The admission of fresh air is of the first importance, and she should be immediately placed near an open window, and in the recumbent position, so that the flow of blood to the head may be accelerated. At the same time any tightness of dress should be at once remedied, and a little cold water sprinkled in the face. The use of smelling-salts is occasionally of service in rousing a patient, but care must be taken not to apply them too vigorously, for fear of irritating the nose.

If, as sometimes happens, a fainting-fit is only the prelude to a fit of hysterics, the patient should be thoroughly roused by the free application of cold water, so soon as the hysterical sobbings begin to show themselves, and a brisk walk up and down the room, between two not too sympathising friends, will then probably avert a domestic catastrophe which is always annoying to all concerned. Persons with a feeble circulation, and, therefore, more liable to faintness, may be glad to know that they can often avert a fainting-fit when they feel it coming on, by at once lying down flat on a sofa; or, if from position—as in church—this is impossible, then bowing the head well down on the knees will have the same effect.

WEAK ANKLES are common accompaniments of "flat foot," or may exist alone. The sufferer is found to "tread over" considerably in walking, and is often conscious that the ankles yield during walking, the foot having a tendency to turn on its side. The best remedy is well-made lace-up boots, with the sides made stiffer than usual, those with elastic sides giving no efficient support. In children who frequently suffer from enlargement of the ankle-bones, bathing with sea-salt and water, or with sea-water, and the administration of cod-liver oil, are very useful remedies.

WHITLOW is a very common affection, and one which, in its simpler forms, may be treated domestically without danger. The simplest kind of whitlow is that which forms about the root of the nail, and which may, or may not, depend upon some trifling injury, or upon the introduction of some irritating substance beneath the skin. At first the finger is found to be tender and hot, and soon a sense of throbbing is experienced in it. This is relieved by holding the inflamed part in hot water, and by poulticing; but, in all probability, matter will form, and will be seen as a white fluid, either beneath the nail itself, or raising the skin around its root. The pain is now severe, owing to the matter being pent up, and immediate relief will be obtained as soon as it is evacuated. If beneath the nail, the best plan is to remove a small wedge-shaped piece of the nail with sharp-pointed scissors, so as to reach the point where the matter lies, and this can be generally effected without pain to the patient. If the skin around the nail is distended with the matter, it should be freely incised with a lancet or sharp and clean penknife, and this operation, though much dreaded by the patient, is absolutely painless, the skin having already lost its sensibility.

The more severe forms of whitlow require prompt surgical attendance. In one form, the end of the finger becomes acutely inflamed and swollen, the mischief beginning in the membrane covering the bone. That an early and free incision should be made down to the bone is absolutely necessary, in order to save it from destruction; but fortunately, even in neglected cases, it is seldom, if ever, necessary to perform amputation for this complaint, the surgeon being able to extract the piece of dead bone, and leave a very useful though somewhat shortened finger. In another and more severe form of whitlow, matter collects in the finger and palm of the hand, both of which become immensely swollen; and here a skilful incision is necessary, in order to evacuate the matter without damaging the important structures of the palm of the hand, or leading to stiffness of one or more of the fingers. In case the assistance of a surgeon cannot be obtained, it may be mentioned that the proper place to incise this form of whitlow is in the central line of a finger, and just at the point where it joins the hand. The incision should be not more than half an inch long, and should always be on the palmar surface, or under-side of the finger.

WOUNDS.—The immediate treatment of ordinary wounds of a slight character has been sufficiently indicated in the sections relating to hæmorrhage. The after-treatment of a wound cannot be of too simple a character.

Where there is no pain or discomfort about the wounded part, there can be no object in disturbing the first dressing applied, and this should be left undisturbed for from two to four days, according to the severity of the injury.

If all has gone well, it is quite possible that a skin wound may heal at once, and merely require the application of a piece of plaster over it, to protect it for a few additional days.

If, however, it is found on carefully soaking off the original dressing that the wound is open and discharging, the best application will be the "water-dressing." This consists simply of a double fold of lint or soft linen suited to the size of the wound, and wetted with warm water, over which a piece of oiled silk, slightly larger than the lint itself, is secured with a strap of adhesive plaster or a bandage. The lint should be changed twice a day, but the oiled silk will serve for many days in succession.

If a simple wound fails to heal in a few days under this treatment, medical advice should be had recourse to.

If on removing the first dressing a wound is found to have its edges red and tender, and the part is painful, a poultice of bread or linseed meal may be applied for a day or two before the water-dressing is begun.

The common dread of what is termed "proud flesh" may be mentioned here, simply for the purpose of stating that the so-called proud flesh is only a slight exaggeration of the ordinary process of healing, and is of no moment unless it rises high above the general surface, in which case the occasional application of a piece of blue vitriol (sulphate of copper) will soon reduce it to proper dimensions.

XXIII.—AMBULANCE WORK.

AMBULANCE work has of late made great strides both in the services and in civil life. Only a few years ago when an accident occurred in the streets or in the hunting-field, people completely lost their heads and rushed about in the wildest way, no one knowing what to do or where to go for assistance. This has changed for the better, and every school girl can improvise a splint, and talks glibly about compression of the femoral artery.

The best method of conveying a person who has met with an accident to a place of safety depends partly on the extent of the injury and partly on the amount of available assistance. Probably, one of the most awkward predicaments conceivable is where two men are on a moor, and one of them sprains his ankle, or meets with a still more serious injury when some considerable distance from any habitation. The gravity of the situation is greatly increased if the accident occurs in the winter and towards the close of the day. If the invalid is a heavy man, and the distance is great, it is almost hopeless to attempt to get him along, and we have no hesitation in saying that the best thing to be done under the circumstances, is to leave him and go in search of assistance. If a bone is broken it is best to improvise some kind of splint to prevent the fragments from coming in contact with the soft tissue and occasioning further damage. The patient should then be made as comfortable as possible by being placed in the lee of a haystack, or bush or hill, or anything that will keep off the wind. His companion should give him his overcoat and all his superfluous clothing, so that he may be kept as warm as possible. If either of them has a flask of brandy, it should of course be left with the injured man. He should also be furnished with some matches and possibly enough underwood might be hurriedly collected to make a fire. The patient should, if such a thing is available, be given a musket and some cartridges. The time it will probably take to obtain assistance should be calculated, and if there is no possibility of getting back till after dark the patient should be instructed to light his fire about the time of the arrival of the expected succour, and if able to do so, to discharge his gun at intervals of five minutes, so that the report may be heard.

The friend should be careful to note some prominent landmark, and should then hasten with all possible speed, noting carefully the route he takes and the objects he passes on the road. The search party should be provided with lanterns, and should take with them a good supply of blankets, one or two long poles, and a little wine and easily digestible food.

When the circumstances are less unfavourable, an attempt may be made to get the patient home even when there is only one person to assist. In the case, for example, of a sprained ankle, the bearer takes his stand on the patient's injured side, which for the sake of illustration we will suppose to be the right. The patient then places his right arm round the bearer's neck, the bearer seizing the wrist of the encircling arm with his right hand. The bearer then passes his left hand behind the patient's body, and grasps his left hip. The patient being now told to hop, does so, on the left foot, the right (the injured foot) being held up behind. In this way a patient can be conveyed at a good rate for a considerable distance. If the bearer is strong enough, he should draw the patient right in to himself or herself, and carry the patient bodily.

If the bearer is fairly strong and the distance is not too great, the method employed by firemen may be attempted. The bearer, standing in front of the patient, seizes the patient's right wrist with his left hand. The bearer then bends down in front of the patient until the right shoulder is on a level with the patient's right hip-joint. The bearer then pulls the patient across his shoulders, and, grasping the legs with his right arm, assumes the erect position, and carries the patient well poised on his shoulder.

When two bearers are available the problem is a comparatively simple one and there are several plans.

The first method is shown in the accompanying illustration, Fig. 1, the opposite hands of the bearers being interlaced under the thighs and behind the loins, and the patient putting his arms round the bearers' necks. This is very trying to the bearers and can only be endured for a short distance. A patient is much more easily carried in the semi-recumbent position, if placed in the arms of two men, arranged as shown in the illustration, Fig. 2, their opposite hands firmly interlacing in front, and their other hands being placed on each other's shoulders, so as to support the patient behind; thus the weight of the patient falls chiefly on the two arms behind him, and he can be carried for some distance without fatigue.

Another way of carrying a patient is upon what is known among schoolboys as a "sedan-chair," each bearer grasping his own forearm and that of his companion about its middle, as shown in the illustration, Fig. 3, and the patient grasping the bearers' necks as shown before in Fig. 1. This is a convenient way to carry ladies over shallow streams, etc., in the course of country walks or at picnics; and as on those occasions sprained ankles are not altogether unknown, a disabled member of a party may thus be transported for a long distance with relays of bearers, the two working together being as nearly as possible of a height.

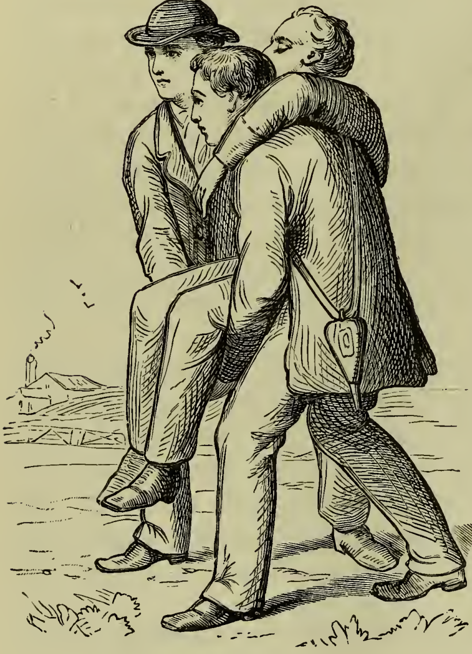


FIG. 1.

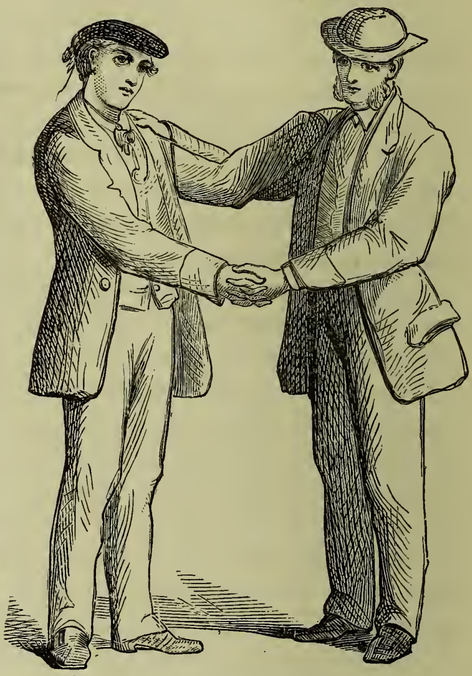


FIG. 2.

When anything in the shape of a stretcher can be obtained or improvised the task of moving the patient is much simplified.

By far the most satisfactory way to carry a wounded man is on some form of litter borne by four bearers. A hurdle, or a small door taken off its hinges, is a very good substitute for a regular "stretcher," and either, with a mattress and pillow, will form a very comfortable temporary means of transport. When neither of these is at hand, a blanket may be used to carry a patient in for a short distance, or if four poles can be procured and fastened together to form a framework, the blanket can be tied to the corners, as shown in the illustration, Fig. 4, and will then be much more efficient and easy to carry.

Whatever method is adopted there are certain rules with regard to carrying a stretcher, which should be carefully attended to:—A stretcher should be carried by four men rather than by two, and should always be carried by the hands and not on the shoulders; the drawbacks to the latter proceeding are the difficulty of finding on an emergency four men of the same height, so that a level position may be secured; and also that any tilting of the stretcher may throw the patient off from such a height as seriously to aggravate his injury. Besides, the raising and lowering of the burden is not an easy matter, and is apt to frighten the patient when unskilfully performed.

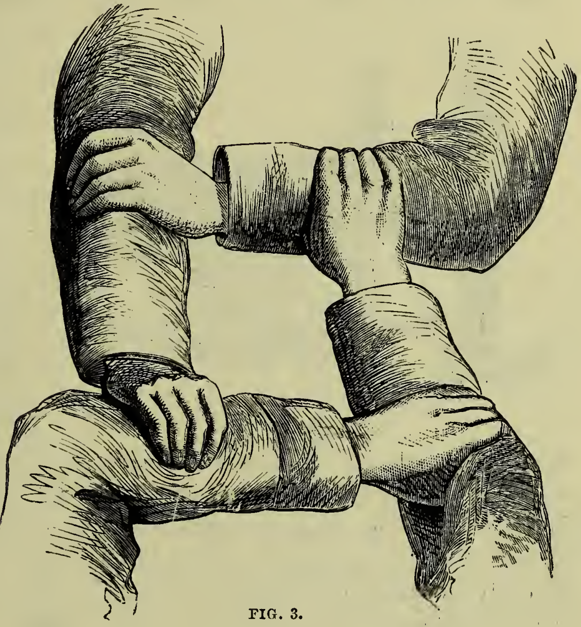


FIG. 3.

It is *not* advisable that the bearers of a stretcher should "keep step." If only two men are carrying a stretcher, and they march "in step," the load they are carrying will be swayed to the right and left side alternately, to the great discomfort of the patient; but if one advances his right foot and the other his left, the burden will be kept perfectly even. The same rule applies to the case of four bearers, only here the front and rear men of opposite sides should keep step, and be out with their companions.

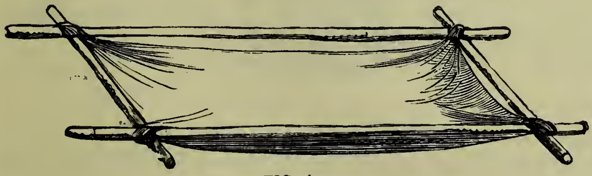


FIG. 4.

A very good stretcher may be improvised in a case of emergency with a couple of coats and a few poles or sticks. The sleeves are turned inside out so that the inverted sleeves are inside each coat, then button up the coats and place them on their backs on the floor, the collar of one coat touching the tail of the other. Two sticks or broom handles are then pushed down the sleeves and a very efficient mode of transport is at hand. Two umbrellas or sticks tied across the poles at each end will keep them apart and will lighten the task of the bearers.

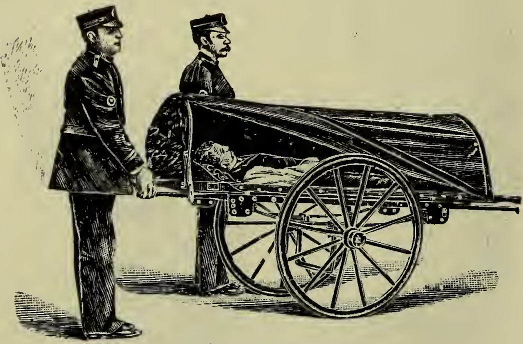


FIG. 5.

One of the best forms of litters is that known as the "Furley." It is placed on wheels and is easily worked by one person. It has metal arcs as feet, and a self-adjusting pillow. The litter portion with its cover is easily detached, and can when necessary be carried by the handles at the ends. The cost of the apparatus complete is about £12. The St. John Ambulance Wheel Litter is more elaborate and costs £16. The accompanying illustrations (Figs. 5 and 6) give a good idea of the method of using an apparatus of this description.

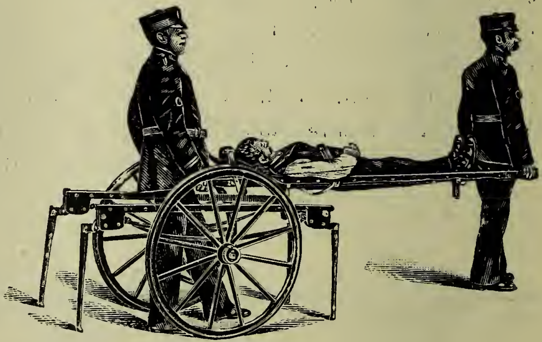


FIG. 6.

For railway travelling the Davy Hammock may be used with advantage, especially if the journey is a long one.

There are in this country several organisations which make provision for the transport of the sick or injured.

The Street Ambulance Branch of the Hospitals Association was established in 1889 for the succour and safe removal of cases of street accident in the Metropolis. There are over fifty stations, of which the majority are public thoroughfare stations, or fire brigade stations. The

National Aid Society has no permanent trained staff, but when war breaks out accepts medical men as volunteers to take charge of the sick on the field of battle and in hospital. The Medical Staff Corps of the army has its trained bearers, hospital orderlies, and a complete organisation and outfit. The Volunteer Medical Staff Corps bears the same relation to the volunteers that the Medical Staff Corps does to the regular army.

The following drills were devised by Mr. John Furley, Deputy Chairman of the St. John's Ambulance Association.

Stretcher Exercise, No. I.

For three bearers. To be used when space will allow.

1. The instructor selects the bearers and numbers them—1, 2, 3, at his discretion. Should one man be taller and stronger than the others, he should be styled No. 1, as he will have to bear the heavier part of the burden.

All orders will be given by No. 3. Bearers should be taught to take any of the positions named in the following exercises, whether that of No. 1, 2, 3, or 4 bearer.

2. "Place the Stretcher."

No. 1 taking the head of the stretcher, and No. 2 the foot, places it in a line with the patient's body, the foot of the stretcher being close to his head.

No. 3 attends to the patient, assisted by Nos. 1 and 2 when necessary.

3. "Fall in."

At this order, No. 1 places himself at the patient's right side, No. 2 at his left side, and both bearers face each other. No. 3 takes position on the injured side in a line with the patient's knees.

Note.—The duty of No. 3 will be entirely to look after the injured part of the patient's body or limbs, to see that no bandages or splints become displaced, and also that No. 2 bearer, in lifting or carrying, does not in any way touch the patient's feet.

When everything has been arranged for the removal of the patient, the order will be given—

4. "Ready."

Nos. 1 and 2 now each sink down on one knee, and grasp each other's hands under the shoulders and thighs of the patient, whilst No. 3 places his hands underneath the lower limbs, always taking care, in case of a fracture, to have one hand on each side of the seat of injury.

5. "Lift."

All three bearers rise together to their feet, keeping the patient in a horizontal position.

6. "MARCH."

All take short side-paces until the patient's head is over the pillow of the stretcher.

7. "HALT."

All three bearers remain steady, and wait for the next order.

8. "LOWER."

The patient is placed gently on the stretcher, and the bearers then stand up.

9. "FALL IN."

On this order being given, No. 1 places himself at the head of the stretcher with his face towards the patient. No. 2 at the foot with his back to the patient, and No. 3 places himself at the side of the patient.

10. "READY."

Nos. 1 and 2 stoop down and grasp the handles of the stretcher, having previously adjusted their shoulder-straps in case they are used. No. 3, as soon as he sees all is right, gives the word—

11. "LIFT."

The stretcher is now raised to position ready for moving off.

12. "MARCH."

On this word being given, No. 1 steps off with the left foot, and No. 2 with the right. The step should be a short one of twenty inches, and taken with bent knees just from the hips.

13. "HALT."

The place of destination being reached, on the word "Halt" being given, the bearers remain steady in position.

14. "LOWER."

At this order the bearers place the stretcher on the ground, and then stand up.

15. "UNLOAD STRETCHER.—READY."

The bearers prepare to take the patient off the stretcher.

16. "LIFT."

The bearers raise up the patient as before instructed.

17. "LOWER."

The patient is carefully lowered upon the vehicle, bed, or other place to which it has been designed to carry him.

STRETCHER EXERCISE, No. II.

For four Bearers. To be used when there is not sufficient space for carrying out Exercise No. I.

1. The instructor numbers the bearers—1, 2, 3, 4. All orders will be given by No. 4.

2. "FALL IN."

At the word "Fall in," Nos. 1, 2 and 3 take position on one side of the patient. No. 1 places himself at the patient's shoulder, No. 2, near the middle of the body, No. 3 near the patient's feet. At the same time No. 4 places the stretcher on the ground by the other side of the patient, and remains standing near its centre, facing the other bearers.

3. "READY."

Nos. 1, 2 and 3 stoop down, and kneel on the left knee, if they are on the left side of the patient, on the right knee if they are on the right side of the patient. They then proceed to take hold of the patient:—No. 1 passing one of his arms beneath the patient's neck and the other under his shoulder-blades; No. 2 passing both arms under the middle of his body, one above, the other below the buttocks; and No. 3 passing both arms under the lower extremities, excepting in case of fracture, when he must place one hand on each side of the broken bone, so as to steady it. No. 4, when the "Ready" is given, grasps the near pole of the stretcher with his left hand, and the opposite pole with his right hand, near the centre.

4. "LIFT."

On the word "Lift" being given, Nos. 1, 2 and 3 raise the patient up, each at the same time placing on the knee which is not touching the ground his elbow of the same side. While Nos. 1, 2 and 3 are thus raising the patient, No. 4 moves the stretcher into proper position under him, and kneels down on one knee by its side.

5. "LOWER."

At the word "Lower," Nos. 1, 2 and 3 carefully lower the patient down to the stretcher, while No. 4 at the same time assists in supporting and placing him on it.

6. "STAND TO STRETCHER."

On this order being given, each bearer stands up: No. 1 goes to the head of the stretcher with his face towards the patient; No. 2 to the foot, with his back to the patient; while Nos. 3 and 4 remain in position on each side of the stretcher.

7. "READY."

Nos. 1 and 2 grasp the handles of the stretcher, having previously adjusted their shoulder-straps in case they are using them.

8. "LIFT."

At this word, Nos. 1 and 2 bearers raise the stretcher steadily together and stand up.

9. "MARCH."

All being ascertained to be in order, on the word "March" being given, Nos. 1 and 2 bearers move off:—No. 1 stepping off with his left foot and No. 2 with his right foot. Nos. 3 and 4 march on each side of the stretcher. On arriving at the place of destination, the following orders are successively given:—

10. "HALT."

11. "LOWER."

12. "UNLOAD STRETCHER.—READY."

13. "LIFT."

14. "LOWER."

N.B.—These orders, viz.—Nos. 10 to 14 inclusive—are to be carried out in a similar manner to orders Nos. 13 to 17 in Exercise No. I.

STRETCHER EXERCISE, NO. III.

When only three bearers are available, and the space is limited as before, the following alterations must be made in the foregoing (No. II.) Exercise:—

1. The instructor numbers the bearers—1, 2, 3.

All orders will be given by No. 3.

2. "PLACE STRETCHER."

No. 1 bearer places the stretcher on the ground by the side of the patient and as close to him as practicable.

3. "FALL IN."

The three bearers take the same position on one side of the patient as laid down in Exercise No. II.

4. "READY."

Nos. 1, 2 and 3 kneel down, placing themselves as close to the patient as they conveniently can, and then take hold of him as directed in Exercise No. II.

5. "LIFT."

Nos. 1, 2 and 3 raise the patient as directed in Exercise No. II.

6. "LOWER."

At the word "Lower," Nos. 1, 2 and 3 lean forward so as to carry the patient over the stretcher, and then carefully lower him down upon it.

7. "STAND TO STRETCHER."

At this direction No. 1 goes to the head of the stretcher, No. 2 to the foot, and No. 3 remains in position at the side of the stretcher.

The remainder of this Exercise will be precisely the same as is given in Exercise No. II., from orders 7 to 14, both included—the instruction for No. 4 bearer to walk by the side of the stretcher being alone omitted.

STRETCHER EXERCISE, No. IV.

For use in mines and narrow cuttings where two men only can be engaged.

Necessary first aid having been given, Nos. 1 and 2 will carefully place the stretcher in a line with the injured man's body, the foot of the stretcher being, if possible, close to his head. It is not advisable to be too particular as to the head or foot of a stretcher in a mine, as it would probably be quite impossible to reverse it, and it is always competent for the bearers to lower the pillow.

No. 1 will give the word "Ready," when both get into position as follows:—

No. 1 places his feet one on each side of the patient between his body and arms, the toe of each foot as near the armpits as possible, standing over the man. He then stoops down and passes his hands between the sides of the chest and the arms underneath the shoulders, and locks the fingers.

If the patient's arms be uninjured he may put them round the neck of No. 1, and by this means greatly assist him in lifting.

No. 2 at the same time places his right foot between the calves of the injured man's legs, as close to the knees as possible, and his left foot at the injured man's right side close to the crest of the hip; he then kneels down and passes his arms round the outside of the patient's thighs at the lowest part, and locks his fingers behind just at the bend of the knees.

When both are ready, No. 1 will give the order "Lift and move forward." The patient is then to be slowly lifted just sufficient to allow his body to clear the stretcher. Both bearers will slowly and gradually move forward, No. 1 by very short steps, and No. 2 by bending his body forward over his left thigh, by which means he exercises a pushing movement which very greatly assists No. 1. No. 2, when he has bent his body forward as much as he can without moving his feet, advances his right foot to his left, then again advances his left foot and bends his body forward. This movement is to be repeated until the patient is laid on the stretcher.

The bearers will then act in the ordinary manner as far as the nature of the locality will permit.

In practice these directions are simple enough and are much less complicated than they appear on paper. Schoolboys learn them fast enough and enjoy the fun of the drill.

AID TO PERSONS INJURED BY ELECTRICITY.—Of late the services of people skilled in ambulance work has frequently been called in requisition in the case of people who have been injured by electricity. As electrical currents are now so widely distributed in our towns, it is not unlikely that accidents of this description will become of more frequent occurrence. As prompt treatment is of the utmost importance, and as the method of treating such cases is not generally known, we append a series of practical directions which may be found of use in case of necessity arising.

1. Contact with the electrical conductors must be broken or the current turned off. If this is not done those who come to the rescue will probably fall victims.

2. The patient should be placed in a well-ventilated room, and those not actually engaged in carrying out the treatment should be excluded.

3. The clothing, especially about the chest and neck, should be loosened or stripped off.

4. Artificial respiration should be resorted to, as in cases of drowning.

5. The circulation should be stimulated by vigorously rubbing the extremities and by flapping them with a wet towel.

6. The treatment should be continued for at least an hour, even should there be no sign of returning animation.

XXIV.—BONE SETTERS AND "BONE SETTING."

NOT a few of the means adopted for the relief of suffering humanity by medical men are derived from sources that are anything but orthodox. Many of the drugs enumerated in the British Pharmacopœia —that authorised cookery book of doctors—owe their position there to a popular opinion of their efficacy. The herb whose medicinal virtues has been long recognised by the old wives and herbalists of a country side gradually comes under the notice of the qualified disciple of Æsculapius, and spreads from him to his fellows, finally to be incorporated in the armoury of the craft. Many are the nostrums of marvellous reputed power which are swallowed by our trusting fellow-creatures on the faith of tradition, and as yet are not found on the shelves of chemists. The advancing knowledge of the present day has introduced to us drugs the effects of which on the living body are accurately known by experiment; drugs which may be relied on to produce certain definite results, such as increasing or diminishing the rapidity of the pulse, dilating or contracting the pupil, inducing or checking perspiration, etc. It is obvious that these are most valuable tools in the hands of the doctor who is endeavouring to set in order our diseased bodies. And although many are the medicaments employed, the exact *modus operandi* of which is but imperfectly understood, there are still some whose value has been ascertained as the result of scientific investigation, and the why and wherefore of whose actions is pretty completely accepted.

Among the methods of treatment which have pure empiricism for their origin, "bone setting," so called, occupies a prominent place. Without robbing the bone setters of all the credit they justly deserve in effecting many undoubted cures in cases which have been given up by the surgeons, they nevertheless are distinctly quacks, though having introduced a method of relief and cure which is gradually becoming accepted to a very considerable extent by the legitimate practiser of the healing art. No one attempts to deny that many a crippled limb pronounced to be incurable has been restored to a condition of perfect health by the treatment of bone setters; the cases are too numerous and too well attested to be doubted for a moment. But when the individuals who have effected these cures are confessedly ignorant of the structure of the limbs they are treating, who persistently designate every case they are called to as "a joint out," when such is rarely, if ever, the case, and who are absolutely unaware of what it is they have done, even in their most successful cases, they are worthy of no other title than that we have applied to them. For many a day there has scarcely been a district that has not had a "bone setter" who not infrequently has combined this profession with some other calling, such as a blacksmith, and marvellous are the tales of their powers when all other means have been tried in vain. The fact that they frequently fail, as fail they do, and that, too, in cases which, did they possess real knowledge, they would see to be hopeless, should not deter us from appreciating what is valuable in their system, and appropriating it. There are few methods, however wrong, from which some useful hint may not be obtained, for the wrong in many a method lies in the too absolute pursuit of it. For the proper application of a system which has its origin grounded in empiricism, an educated intelligence is required to avoid such mistakes as might overshadow the good that the system really possesses.

It is possible from one point of view that the very ignorance of the practisers of bone setting has been one means of contributing to the success it undoubtedly has gained. Wholly unaware of what they were really doing, they, blindly rushing in where the more knowing would have feared to tread, have succeeded, by the application of the powerful means which were necessary, but which the more cautious would have hesitated to employ, and so would have failed.

It is true, however, that a few of the fraternity had some knowledge to proceed upon, and some system upon which they acted; but knowledge and system alike were merely the outcome of having seen a vast number of cases, and having carefully noticed the result in each—an excellent plan when based upon a definite acquaintance with anatomy. This experience led them to decline cases which they felt to be unfavourable, though not knowing why, and gradually to reduce their method of action within the limits of rules.

The term "bone setting" in itself is distinctly a misnomer. Scarcely ever have broken limbs come under this method of treatment, and when they have the results have been disastrous. A bone is said to be set when it is placed in such a position as to allow the fractured ends to unite. Bones that are ill set are sometimes purposely broken by the surgeon and re-set more favourably; such cases, however, the bone setter does not meddle with. What they really do is to restore the power of mobility in joints which have become stiff from accident or disease.

Not only is the expression "bone setting" incorrect, but their view of the condition they are called upon to treat is wrong. Nothing will persuade one of these bone setters but that the "joint is out," and that what he does is to return it to its place. The remonstrances of the patient and his friends are alike unheeded, and the success that follows his treatment justifies—at least to his own mind—the view he has propounded. Now a broken bone is one thing, and a dislocated joint is another, and it is neither to set the one, nor reduce the other—to use the language of surgeons—that the bone setter is really ever called in.

In order to make clear to the reader what so-called "bone setting" is, we must explain the nature and structure of a joint. The rigid, unyielding bones, or the levers to which the muscles supplying the motive power of the limbs are attached, are enabled to move upon one another by certain arrangements, which are termed joints, similar to the hinges by which a door moves upon its post. Thus the fore-arm can be bent upon the arm at the elbow joint, the leg upon the thigh at the knee, the thigh upon the trunk at the hip, or the fist can be doubled by the folding of the different segments of the hand at the finger joints. The ends of the bones, where they come in contact at the joints, are covered by thin cushions of a firm yet very smooth substance, known as gristle or cartilage. Different joints are of different shapes, but in all the bones which enter into the joints fit into one another to a certain extent, the inequalities at the end of one bone corresponding to prominences and depressions on the other. Sometimes the bones interlock very completely, in other cases the adjacent surfaces are nearly flat. The former variety, of which the elbow may be taken as an example, will obviously allow of more limited movement than the latter, as may be seen by contrasting the extensive range of motion possible at the shoulder joint with that at the elbow. It is further necessary to keep these ends of the bones in contact by some material which shall be sufficiently flexible to permit of the movement of the bones on each other, and at the same time shall not be elastic and allow the ends to be separated from one another. Such a material are the tendons constructed of, and they bear very much the same relation to the ends of the bones, surrounding them more or less completely, as the leather hinges do to a box and its lid. Round about the joint are the muscles and their tendons or leaders, by which they are attached to the bones. The tissue of which the tendons are formed is identical with that which forms the ligaments. Lastly, an arrangement exists in the joint for maintaining the surfaces of the cartilage lubricated by a viscid fluid, which acts like oil in a hinge. Such is the essential structure of joints, however much they may vary in shape and size. In some few there are ligaments inside the joint, passing across from one bone to another; this is particularly the case in the knee. It should be understood that injuries to the joints, especially such as those leading to the escape of the lubricating fluid, are very liable to be attended with serious consequences.

Everyone knows how easily and readily the healthy limbs move, and it is not difficult to understand that anything which diminishes the flexibility of the tendons and ligaments, or causes the opposed surfaces of the cartilage to adhere together, will diminish the freedom of movement. Now it is exactly such conditions as these that accident or disease may lead to. We most of us, at some time or other of our lives, have unfortunately experienced a blow on the joint, or a sprain; the knee may have been struck with a cricket-ball, or the ankle may have been "twisted" by a fall. In the majority of such cases no harm follows, there is probably a good deal of pain, the joint is swollen and cannot be moved, and an enforced rest adds to the general discomfort. In a few days, however, the limb has returned to its normal state, and no harm has been done. Supposing, however, that the injury had been more severe, or that proper rest and other remedies had not been adopted, or that the individual's constitution had been such as to predispose him against recovery, the joint would then have become inflamed, and the ultimate result of such a condition would very probably be the formation of a certain material which would cause the surfaces of the cartilage to become adherent, and would render the ordinarily flexible ligaments firm and rigid, a state of things that we have seen interferes with the mobility of the joint. Rest, whether simply by keeping the limb quiet, or, as it is more completely obtained, by bandaging the limb in a splint, is a necessity for the treatment of the case; but this very rest, if unduly prolonged, is apt to favour the development of the "adhesions," as they are called, that have resulted from the inflammation, and allow of them becoming tough fibrous bands, which, if once formed, are rarely, if ever, to be got rid of. It is clear, however, if these bands are broken across, or if the rigid ligaments which impede the movements of the bone be bent, and made pliable, that a considerable, or perhaps complete, improvement may be effected. It would seem that the actual significance of a stiff joint has not hitherto received quite all the attention it has deserved, and that possibly the notion of resting a limb has been pushed too far. Be this as it may, what the bone setter does is forcibly to flex the affected joint, and in so doing rupture the adhesions and bend the ligaments, leaving the ends of the bone free to move upon one another. With the knowledge of how serious joint affections may be, the surgeon may have hesitated to apply sufficient force to effect his object, and only succeeds in causing pain, whilst the more ignorant "bone setter" who follows him, heedless of what may be since he knows it not, puts the whole strength of his arm into his work, and breaking through all obstacles, not infrequently brings about a perfect cure at once, and points to the cracking that is heard as the restraining bands give as the proof of his assertion that the "joint was out," and has now "gone back to its place."

It would not be quite fair, however, to the bone setters to attribute their success simply to ill-considered efforts of brute force. The more successful among them had reduced the method of procedure to rules, the results of extensive experience. When once a case is undertaken—and it is by no means every one that presents itself that is accepted—a definite mode of action is determined on, and either put in practice then and there, or after a slight preliminary delay, during which the affected part is usually ordered to be poulticed and rubbed with oil, ostensibly for the purpose of softening and rendering more pliant the structures round about the joint. When the operation itself is performed, there is no more done than is actually necessary. The limb is bent and straightened by a few effective movements, not one beyond what is needful. According to the joint which is to be manipulated, and the supposed direction in which the "bone is out," so are the movements made; but considerable importance is attached to making them in the direction in which the most pain is produced, and at the same time it is regarded as essential that a painful spot, which is almost always to be found somewhere over these joints, should be firmly pressed upon by the thumb of one hand of the operator. One great advantage is the absence of apparatus and instruments, often so terrifying to patients. The limb is held firmly on the side of the joint next to the trunk, and the required movements are made by bending and twisting in definite directions the segment of the limb beyond the seat of the mischief. Advantage is often very cleverly taken of the natural leverage afforded by the bones and the weight of the trunk, and this without any real knowledge on the part of the manipulator of the actual arrangement of the bones and muscles, but simply as the result of experience.

Whilst it is plain that in cases such as we have described a plan of treatment like this appears to be rational, and is, as we know, often successful, it is equally obvious that there must be many diseases of the joints which would be made very much worse by such a course. For instance, the cartilaginous ends of the bone not infrequently become destroyed as the result of disease; or matter may form in the joints, and break through to the surface. This is especially liable to co-exist with the death of a portion of the bone. In all such cases the bone setter, if he touched them at all, would assuredly aggravate the disease, and death has been known to follow their interference. And it is at this point that the skilled surgeon has the advantage over his empiric rival. The knowledge of anatomy and of the true condition of the parts, together with a general acquaintance with the signs and symptoms of disease, would lead the former to recognise at once the suitable from the unsuitable, and to know when he might with propriety act. With the other it is often but little more than guessing, and sometimes he guesses wrongly. Enough will have been said to show the real value of so-called "bone setting," and that whatever may have been its results in the hands of its practisers, it is destined to become in the hands of the intelligent surgeon a valuable addition to his means of combating disease. Accepting from the quack the general principles of his art, it is amplified and corrected by the light of knowledge, and the how to act is improved as the when to act is accurately ascertained. There should be no need to caution the public at large against attempting the process themselves.

In connection with the subject of "bone setting," a word or two may be said on the treatment of deformities. In the majority of these cases, domestic medicine is obviously powerless. The wisest course is to lay the matter before your ordinary medical attendant, and to take his advice about consulting a specialist or expert.

In deformities of the limbs resulting from rickets much, however, may be done without resorting to mechanical appliances or instrumental aid. It is a great mistake to be in a hurry to put children into irons. Many people have a mania for these horrors. Often enough, it is true, the legs become straight when these instruments of torture are worn; but in the majority of cases, they would get all right just as quickly without them.

We are often told that a child "gives way at the ankles." This simply means that the bones are not yet sufficiently strong to support the weight of the body, and the rational treatment is obviously to keep the child off its legs till they grow stronger. A little persuasion will, as a rule, be found more efficacious than a bar of iron. Let the child crawl, by all means; but keep him from standing or walking. The only kind of splint that is likely to do any good is a long, wooden, padded splint, placed on the outer side of the limb, reaching from above the knee to well below the foot, and this acts simply by preventing the child from using its feet. The same result may often be attained by tying the legs together just above the knees. Attention to the general health will in these cases do more good than anything. The child should be placed in as favourable hygienic conditions as possible, special attention being paid to the purity of the air, warmth of clothing, etc. It should, if possible, sleep alone, and care should be taken to keep the bed and bed-clothes fresh and sweet. Milk should enter largely into the composition of the diet, two or three pints, either pure or diluted with water—or, better still, lime-water—being taken in the course of the day. Steel wine is a useful adjunct, and the same may be said of Parrish's chemical food, and the syrup of phosphate or iron. Cod-liver oil, given immediately after meals in a little orange wine, often proves remarkably beneficial. The phosphate of lime powders (Pr. 77) will do much to give the requisite firmness to the bones.

XXV.—MASSAGE AND ALLIED FORMS OF TREATMENT.

MASSAGE, as a mode of treatment, has of late attracted considerable attention both in England and on the Continent. It is by no means a new method, for in a crude and superficial form it has been known from the earliest ages. It was familiar to the Romans, and, under the name of "*lomi-lomi,*" is frequently resorted to by the Sandwich Islanders.

Massage differs entirely from "shampooing" and the so-called "medical rubbing," and will often effect a cure after these procedures have been resorted to in vain.

It may be defined as a scientific method of treating disease by systematic manipulations. For its proper performance a good knowledge of anatomy and physiology is essential, and it is not an art to be acquired in a few weeks or months.

In Sweden and some other countries it is taught thoroughly by lectures and demonstrations, the course extending over a period of five years, no one being permitted to undertake a case, even under the direction of a doctor, until every branch of the subject has been thoroughly studied.

It must be admitted that many people regard massage, and all that appertains to it, with a good deal of suspicion—and not without reason. Massage is frequently employed in cases for which it is essentially unsuited. No discrimination is exercised by the ignorant practitioners of the art, but its use is advocated for all sorts and conditions of chronic ailments. This is a grave mistake and one greatly to be deplored. It must be remembered that it is not a special method of treatment, but only one of a very large number of therapeutic agents which are at the disposal of every skilled physician.

The word massage is probably derived from the Arabic *mass* or *mass'h,* to press softly, the Sanskrit root being *makch.* Some authorities are of opinion that it has its origin in the Greek *μάσσω*, which means strictly to handle or touch, but is more commonly employed in the sense of squeezing or working with the hands as in the manipulation of dough. It is equivalent to the Latin *pinso,* to beat, or pound, or bray, or crush. The Greek *μασσεῖν* is met with in the Latin *massa,* a substance which adheres like putty, and we have also the Spanish *mâsa* meaning dough.

The terms originally employed to denote the various procedures which together constitute what we call *massage* are of French origin and although they may at first seem unfamiliar to us, it must be remembered that they have now an established usage and a definite meaning, for which it would be difficult to find adequate equivalents.

It must be remembered, too, that whilst massage always consists of manipulations, all manipulations do not constitute massage. Massage may be regarded as a general term which includes a number of specific forms or varieties, a brief description of some of the more important of which will now be given.

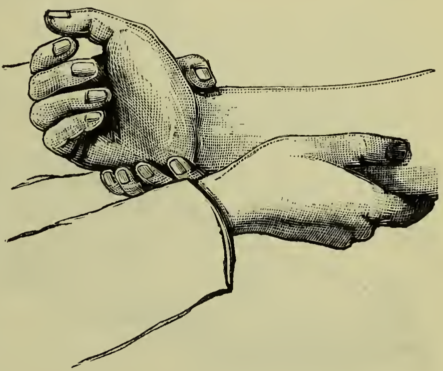


FIG. 1.

I. *Effleurage.*—One of the procedures most frequently resorted to is called *effleurage.* This is a stroking movement made by the palm of the hand passing with various degrees of force over the surface. It is essential that the movement should be as much as possible in the direction of the muscle fibres. The best way is to begin at the extremity of the limb and slide the hand gently upwards towards the trunk. Before the right hand has quite accomplished its movement the left comes into play, starting from the same point. The accompanying illustration (Fig. 1), taken from the fifth edition of Murrell's "Masso-therapeutics, or Massage as a Mode of Treatment," shows how this is done.

In the performance of this manœuvre the hands are moved rapidly upwards from the extremities towards the centre of the body, so as to stimulate the muscles to contract and facilitate the circulation of the blood. If the process were applied merely to the surface of the skin it would do little or no good, and it is requisite that the operator should have a knowledge of the position and course of the various muscles and groups of muscles in order to stimulate them to action in a certain definite order. This method is of little value when used alone, and should always be combined with other forms of massage.

II. *Pétrissage.*—This consists essentially in picking up a portion or muscle with both hands or the fingers of one hand, and, subjecting it to firm pressure, rolling it at the same time between the fingers and the subjacent tissues. The hands move simultaneously and in opposite directions. The thumb and fingers must be kept wide apart so that the whole muscle can be taken up between the fingers and firmly pressed and rolled. The movement is always made from below upwards, and the parts are squeezed in much the same way that one squeezes out the contents of a sausage. The skin must move with the hands or the patient will experience discomfort or perhaps actual pain. It is useless to attempt this variety of massage for hard tissues such as the bones. It will be seen that in the processes of *pétrissage* the muscles and other tissues are firmly grasped with both hands, so as to stimulate the deep muscles to action and set free morbid products, which are then carried away by the small blood-vessels and lymphatics into the general circulation. It is obvious that this differs essentially from ordinary medical rubbing, every movement being performed with a certain definite object. The method of performing *pétrissage* is indicated in Fig. 2, the hand being shown in the act of manipulating the calf of the leg.

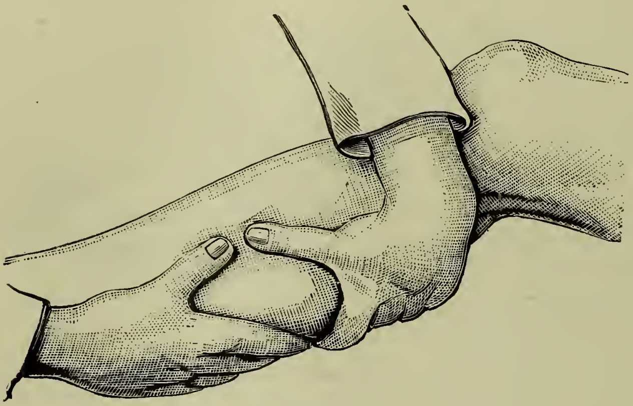


FIG. 2.

III. *Friction* or *massage à friction* is a form of manipulation performed with the tips of the fingers. It is a complex movement combining two distinct modes of procedure. The palm of one hand is placed on the limb and moves from below upwards as in effleurage, whilst at the same time the other hand manipulates the joint, the fingers performing an energetic circular movement. There are two distinct movements, one vertical and the other rotatory, and each hand undertakes a distinct and special function in which the tips of the fingers play the most prominent part. The co-ordination of movement must be made in such a way that there is a general symmetry of action, as the hands adapt themselves with difficulty to a different rhythm. It is a method of treatment of especial value in diseases of the joints. This delicate movement is sufficiently indicated in Fig. 3.

IV. *Tapotement* is a kind of percussion or striking movement which may be made with the tips of the fingers, the palm of the hand, the back of the half closed hand, or the border of the hand. It must be performed smartly and with a certain degree of force. The hand should be hollowed and the wrist should be held loose, care being taken that the arm itself does not come into play. It is difficult to indicate this very clearly in an illustration, but Fig. 4 will give a good idea of what is meant.

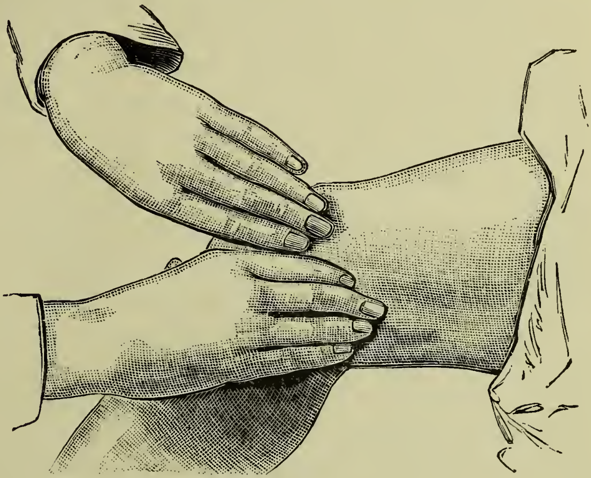


FIG. 3.

Instruments for performing this operation are sold, but they are of no use in unskilled hands, and would no more enable one to perform massage without the requisite knowledge than would the purchase of an amputating knife qualify its possessor for cutting off a leg.

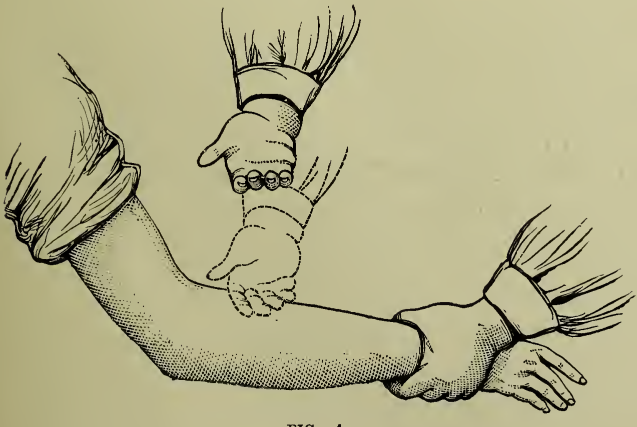


FIG. 4.

We usually speak of a man who has a competent knowledge of massage as a *masseur,* whilst the term *masseuse* is employed when the operator is of the female sex. These terms, however, are frequently misused, and nowadays every shampooer who has had a few weeks' practice in a Turkish bath calls himself a *masseur,* and speaks as if he were an authority on the subject.

The word massotherapy is convenient as indicating the application of massage to therapeutics. A massotherapeutist is one who studies the art and science of massotherapy as a therapeutical agent. He must know in what cases and under what conditions massage is likely to do good, and in what cases it should be avoided, and he should be able to give precise directions for carrying out the requisite manipulations. He need not of necessity be a practical *masseur*, and the *masseur* on the other hand has, as a rule, no knowledge of massotherapeutics. There is the same difference, but to a much greater degree, that there is between a composer and an instrumentalist. A *masseur* may be a useful servant, but unless under strict supervision should never be trusted to treat any ailment, however slight.

Massage, when properly performed, is by no means disagreeable to the patient, and even young children look forward to the daily visit with feelings of pleasure. It must be remembered that massage, like many medicines, is a powerful remedy—capable of doing harm as well as good. It should never be resorted to merely for amusement, or without the advice of a doctor who has studied the subject. At one time many medical men were prejudiced against its employment, preferring to trust entirely to old-fashioned remedies for the cure of their patients; but, now that its mode of action is understood, they are usually amongst the first to recommend it.

For obvious reasons it is desirable that ladies and children should be treated only by a *masseuse*, and not by a man-rubber. It is usually recommended that the sitting should last only a few minutes, and this is the universal rule on the Continent. It is essential to have one day's rest a week, and the *masseur* should never be permitted to pay his visits on Sunday. Care, too, must be taken not to over-fatigue the patient, or harm may be done instead of good. In addition to being thoroughly trained and educated, the *masseur* or *masseuse* must be in perfect health, and should never be overworked. People who suffer from any constitutional complaint or infirmity, especially skin eruptions, should not be employed. As much care should be taken in the selection of the operator as doctors usually display in choosing a wet nurse for an infant. Nurses who, from time to time, may be called on to undertake surgical cases, or the care of patients suffering from infectious diseases, are, even apart from the absence of proper training, unsuited for the work.

There are many diseases which are well adapted for treatment by massage, but, on the other hand, there are many to which it is wholly inapplicable, and which would be more successfully treated by other means. Cases have been known where massage in injudicious hands has caused much mischief, and has even given rise to fatal results. A gentleman died from an aneurism of the chest, which was ruptured by the manipulations of an over-zealous rubber, the patient falling back dead on his couch. In several other instances people have died in a similar way from perforation of the stomach. Even when applied to the limbs it is not always safe, for, when the blood-vessels are hard, or have undergone degeneration, they are easily ruptured. In the case of young and delicate children the bones are soft, so that it is impossible to be too careful in resorting to these procedures.

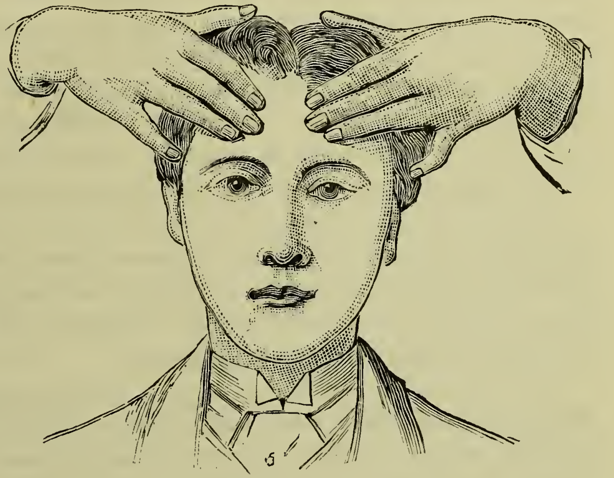


FIG. 5.

The most striking cures by massage are effected in certain cases of paralysis, although it is not every form of paralysis which is benefited by the treatment. In the paralysis of children—or infantile paralysis as it is called—a cure may nearly always be effected, provided the treatment be commenced before the disease has progressed too far. Dr. Murrell, in the fifth edition of his work on massotherapeutics, speaks strongly of the beneficial effects he has observed, and other medical writers have recorded equally good results.

In the hysterical paralysis which affects ladies, a cure may follow even a few applications.

Massage is of much value in headache, and Fig. 5 illustrates the method usually followed.

There is probably no condition more speedily alleviated by this means than chronic constipation. This, as we all know, is an obstinate complaint, and patients frequently take purgatives and other remedies until they despair of ever obtaining even temporary relief. Massage of the abdomen performed over the course of the large intestine, will usually ensure a prompt and easy action of the bowels, the relief in many instances being almost immediate. The forms of massage resorted to in these cases are *effleurage* and *pétrissage,* combined with *tapotement.* For many kinds of dyspepsia, especially when associated with persistent lowness of spirits, this combination forms an excellent mode of treatment. In many liver complaints, too, it is useful, the pressure over the organ stimulating the secretion and flow of bile.

In the treatment of sprains and other affections of the joints, massage is of much value. In these cases we usually resort to what is called *massage à frictions,* performed with the tips of the fingers moving in a circular direction over the painful part, so as to empty the superficial blood-vessels and relieve congestion.

In a great many affections of the nervous system massage is now the recognised mode of treatment. Combined with appropriate medicinal and dietetic treatment it speedily cures children suffering from St. Vitus's dance, even when the complaint is of long standing.

For spinal irritation—one of the chief symptoms of which is a burning pain in the back, between the shoulders, excited by the slightest exertion—massage is strongly recommended, and equally good results follow its employment in "nervous exhaustion," from which both men and women so frequently suffer.

In spasmodic affections of the muscles, due to overwork, it may always be employed with confidence, and by its aid it is often found possible to cure writer's cramp, dancer's cramp, and the cramp from which pianoforte players, violinists, and others engaged in the performance of delicate and intricate movements so frequently suffer. Rest in these cases is usually essential, and it is often weeks or months before the sufferer can resume work with comfort or even safety.

Massage is useful in many constitutional diseases, such as anæmia, or poorness of the blood with deficient nutrition. When the body is badly nourished the patient often gains weight, the powers of assimilating food and nourishment being improved in a very remarkable way. On the other hand, when the tissues are flabby and the patient suffers from excessive corpulence, massage causes a loss of weight, the unhealthy tissues being absorbed and replaced by good solid muscle. Massage is useful in chronic gout and rheumatism, and also in chronic lead poisoning. In diseases of the heart it is, as a rule, inadmissible, but in certain forms associated with dropsy it often does good, by improving the circulation and promoting absorption. It is frequently resorted to in various uterine affections, and is said to be especially indicated when patients suffer from a condition of chronic tiredness and inability for exertion. It sometimes affords relief in diseases which are commonly regarded as incurable.

In connection with this subject it may be as well to say a few words on massage as an employment for women. A few years ago a lady of title, actuated apparently by good intentions, contributed an article to the *Nineteenth Century* and another to the *Queen*, in which she wildly stated that ladies could obtain large incomes by taking patients for treating by massage. The articles in question were widely reproduced, many foolish women were induced to devote their savings to obtaining such instruction as was available, the market speedily became over-stocked, and much misery and disappointment resulted. It should be distinctly understood that in London, at all events, there is no demand for people to train as *masseuses*. Probably the only persons who make an income from it, either directly or indirectly, are the not over-scrupulous people who give lessons and persuade unwary women that it is a lucrative employment. Any person who thinks of taking up massage as a means of earning a livelihood should, before doing so, consult a medical man of recognised position, who is an authority on the subject, who is himself not a teacher, and who has no pecuniary interest in inducing people to invest capital in the undertaking.

The "certificates" with which people who practise massage sometimes arm themselves are absolutely valueless, as no individual, no body, no corporation in this country, has any authority to grant them, so that they are simply not worth the paper they are written on.

In connection with this subject, it is our duty to refer guardedly to a very painful subject, and that is the necessity for the exercise of the very greatest care in visiting the so-called massage establishments so lavishly advertised in the fashionable London papers. This care is especially necessary in the case of young women who come up to London from the country in answer to attractively worded advertisements.

The Weir Mitchell Treatment.—This mode of treating certain cases of hysteria was originally introduced by Dr. Weir Mitchell, of Philadelphia, and consists of a combination of seclusion or isolation, overfeeding, electricity, and rubbing. It is sometimes called the massage treatment, but it has nothing to do with massage proper; with massage, that is to say, as it is practised on the Continent of Europe. The patients are strictly confined to bed, not being allowed to move even for the most necessary purpose, and are rubbed vigorously all over twice a day, food being abundantly administered in the intervals. In some cases the results are most satisfactory, whilst in others the patient derives comparatively little benefit. The class of cases to which it is applicable are perhaps more common in America than in England. It is usually carried out in some "home" or "establishment," and the expense incurred is frequently considerable. There is no reason, however, why this should be the case, as skilled labour is not employed, and the requisite instruction in the various manipulations is readily acquired. When the Weir Mitchell treatment is combined with real massage performed by a trained *masseur* or *masseuse*, the results are much more satisfactory. It is not claimed for this method of treatment that it is adapted for paralysis, but simply that it is useful in certain hysterical affections. Even in hysteria and allied conditions, the results are not uniformly successful—in fact, in a very large number of cases, much harm is done. The mental condition of the patient not infrequently becomes weakened, so that she drifts rapidly towards the borderland of insanity. A few years ago this mode of treatment was regarded almost as a panacea, but it is probable that, on the whole, it has done quite as much harm as good.

It is probable that in the majority of cases more benefit is derived from removing the patient from the influence and over-care of her devoted friends and relatives than from anything else. A great number of cases of chronic illness are fostered and intensified by the devotion of some over-zealous relation. The habit of being waited on and attended to in every way soon grows on an invalid, and there is no greater tyrant and no greater nuisance than the young lady who fancies that she is suffering from a variety of ailments. Removal from home surroundings and their enervating influences, combined with strict and firm discipline, are great curative agents. Out-door exercises and occupation will work wonders, even in the most inveterate cases. Every woman, in order to maintain her health, should be brought up to some useful profession or employment. Fortunately, the days are past when it was considered derogatory for a woman to work.

The Ling System.—The Ling System, or Swedish movement cure, was named after Peter Hinrik Ling, the distinguished poet and physiologist, who in 1813 established an institution at Stockholm in order that he might practise and teach his system of gymnastics, which was described as equally adapted for the sick and the healthy. It includes "passive" movements executed by an external agent upon the patient, and "active" movements produced by the action of the voluntary muscles. The sufferer is usually instructed to carry out systematically certain exercises, and in this way the suppleness of stiff joints may sometimes be restored. There is no doubt that many people benefit much by this treatment, and that for those of a sedentary habit it is useful. At the same time it must be admitted that in these cases equally good results are obtained from a course of cricket, boxing, lawn tennis, or even billiards. Great difficulty is always experienced in getting busy men and indolent women to take sufficient exercise, and anything that will accomplish this object, and maintain the health, may fairly be regarded as a hygienic or even curative agent. The Ling system is now less commonly employed than formerly, but it still has its advocates, especially on the Continent.

The Zander System.—The Zander System of Treatment was originated by Dr. G. Zander, of Stockholm, who invented a series of machines by which the various muscles, tendons, and ligaments of the body can in due sequence be brought into play. It is largely resorted to as a curative agent on the Continent of Europe, but in England has met with little favour. Systematic exercise in a well-regulated gymnasium is much more popular with English girls and boys, who, if they are taught to fence and swim, rarely ail much physically. For middle-aged people, a couple of two-pound dumb-bells used for ten minutes, night and morning, is a far preferable mode of treatment, and dispenses with the necessity for elaborate and expensive apparatus.

XXVI.—THE CARE OF THE AGED.

OLD age, although not strictly speaking a disease, presents many points of interest that may fairly occupy our attention. As life advances, the tissues become condensed, the bones firmer, the cartilages harder, and the articulations closer; the muscles fail in their tension; the organs of the senses lose their refined adaptations, and the skin falling into wrinkles and folds loses its colour, softness, and elasticity. But these cannot be regarded as phenomena of disease, for they belong as naturally to the declining period of life as certain phenomena of development—the cutting and the shedding of the teeth, for example—belong to infancy and childhood. Some people as they grow old seem only to wither and dry up—sharp-featured and shrivelled old folk, yet withal wiry and tough, clinging to life and letting death have them, as it were, by small instalments slowly paid. With others—women more often than men—the first sign of old age is that they grow fat, and this abides with them till, it may be, in a last illness sharper than old age, they are robbed even of their fat.

Death by extreme old age may in many instances be considered as the desirable end of a long-continued and perhaps weary journey. The sufferer falls asleep as he might do after severe fatigue, and the long pilgrimage of life is brought to a close with little apparent derangement of the ordinary mental powers. Without pain, anger, or sorrow, the intellectual faculties lose their brightness; ambition ceases or is merged into the desire for repose; ideas of time, of space, and duty, lingeringly pass away; to sleep and not to dream is the pressing and still more pressing need, until at length it whiles away nearly all the hours. The awakenings are short and shorter, painless, careless, happy awakenings, to the hum of a busy world, to the merry sounds of children at play, to the sounds of voices offering aid, to the effort of talking on simple topics and recalling events long since past, and then again to overpowering sleep. The final scene is often brief, and the phenomena of dying are almost imperceptible. The senses fail, as if sleep were about to supervene, the perceptions become gradually more and more obtuse, and quietly and calmly the long last journey is undertaken, so that we can scarcely tell the precise instant at which the solemn change from life to death has been completed. It would seem that the act of dying may be as painless as that of falling asleep; indeed, those who have recovered after apparent death from drowning, and after sensation has been completely lost, assert that they have experienced no pain. The mind at the solemn moment may be absorbed in an instantaneous review of those impressions made upon the brain in bygone times, which are said to present themselves with such overwhelming power, vividness, and force. This purely painless process, this descent by oblivious trance into oblivion, is the true euthanasia—the sequel of health, the happy death engrafted on the perfect life.

So much, then, for euthanasia; a death like this may be desirable, but, practically, the majority of us like to live as long as we can, and we may advantageously consider what steps we may take, when advanced in years, to prolong life and preserve our faculties unimpaired.

In the first place old people have undoubtedly certain advantages over their younger brethren. They have passed the ordeal of epidemics, and if they have never had scarlet fever or whooping-cough, they are not likely to catch it now. Then, too, they have passed the age at which consumption and many other diseases are developed, and so far, as we have said, they have a decided advantage. But on the other hand, old people, and those who have lost their teeth, run some risk of not being sufficiently nourished in consequence of swallowing their food too rapidly. They are often hurried over their meals, through the thoughtlessness of those around them, and since they chew slowly, and secrete saliva slowly, the food remains undigested. Their juniors should know this, and, remembering it, should govern themselves accordingly. The story is told of a lady—a kindly British matron—who, on being remonstrated with for spending more hours at table than was good for her, replied that if she did not do so she would be a widow in a week, and that she habitually ate too much to keep her aged husband in countenance.

It is of primary importance that, for old people, the meat should always be of the best quality, and as soft and tender as possible. When the teeth are gone and no artificial substitutes have been provided, it should be cut up finely, or may even be minced. Vegetables should not be over-softened in cooking, and there should be sufficient resistance in them to make chewing imperative, so as to excite the secretion of the fluids of the mouth, which is so essential for proper and easy digestion. There can be no doubt that in the decline of life fermented liquors are more advantageous than in early manhood. It is strictly in accordance with the teachings of physiology to increase as years grow upon us the moderate quantity of stimulant we have been accustomed to take. Elderly people are able to do with less sleep than younkers, and need not be alarmed at a certain shortening of their night's rest, which is only natural. But sometimes this is carried too far, even when the health appears to be perfect in other respects, and they get worn out with restlessness, and rolling about. This inconvenience may often be obviated by taking a little food and stimulant the last thing before going to bed. A sandwich and a glass of stout will make an excellent night-cap, and will often ensure a refreshing night's rest. Sometimes an egg beaten up in a little brandy and water or brandy and milk will succeed equally well. Some people like malaga, and others like a glass of burgundy or port, warmed, spiced, diluted, and sweetened. Many people take gruel or arrowroot every night of their lives, but the custom is not a good one. We may be wrong, but we always think they take it because, to use a popular but suggestive expression, "it is filling at the price." It undoubtedly contributes to length of days to associate as much as possible with young people, and to adopt such habits and manners as may attract rather than repel them, to which there is too often a temptation in old age. Grandchildren are not to be despised, for the best companions are those whose spirits are high and joyous, if we can only induce them to rally round us, and infect us with their life. There is nothing more conducive to a long life than ease of mind, contentment with the present, and a calm confidence in the future. It is not hard work that kills the active, nor idleness that kills the man of leisure, be he old or young, but worry and *ennui.*

The influence of mental emotions over digestion must not be forgotten. Bread eaten in sorrow remains unabsorbed; and it is not without reason that even from the earliest times, and amongst the most barbarous nations, companionship during meals has always been sought. It is not only painful reflections which disturb digestion, but any concentrated thought is equally injurious, and injurious in close proportion to the intellectual powers of the individual. The cleverer you are the greater the necessity for taking your meals in company. To the brain-worker cheerful distraction at meal-times is an imperative necessity, the habitual neglect of which entails chronic disease and the early failure of the digestive powers. The adjuncts of family meals should be made as agreeable as possible. A change of clothes, clean hands, and courteous manners, should not be reserved for company, but enforced as a daily habit. Table decoration is not to be despised, and the cook should be encouraged to make her dishes as attractive as possible. The forms of animals, and, in fact, anything which makes us remember that the food has been a living animal at all, should never be conspicuously displayed, but covered with such vegetable garnish as is capable of harmonising with the character of the dish. Many people have a great objection to seeing such things as calves' heads on the table on purely artistic grounds. Ease of mind and ease of body are requisite for complete digestion. Muscular exertion should be avoided immediately before and immediately after all substantial meals. The best employment after dinner is light conversation or music, accompanied by such gentle sauntering movements as are encouraged by a well-ventilated drawing-room. A cigar or cigarette is often a great help to digestion. After a night's rest and the long fast which has emptied the digestive organs, food should be taken before any of the material business of the day is begun. Work done before breakfast is more tiring, and is not done so well as after the stomach has been fortified. The hour of rising should regulate the hour of breakfast. It is no proof of vigour to forego breakfast without inconvenience, but, on the contrary, it is a great point to be able to lay in a good foundation for the day's labour. The weak and feeble, as well as those advanced in years, will find it a good plan to have a cup of tea, with some dry toast or bread and butter, before attempting to get up. Many people prefer a tumbler of milk with a table-spoonful of brandy or rum in it ; but we should certainly recommend the cup of hot tea by preference. In winter it is not a bad plan to have a fire to dress by, especially when the process of shaving has to be gone through.

People as they get older often suffer from torpidity of the bowels, and constipation is with them a constant source of trouble. The practice of taking aperient pills is a bad one, and it is much better to effect the desired object, when possible, by a little attention to diet. Many people can ensure an evacuation by taking every morning on getting out of bed a tumblerful of cold water. The draught may be made more palatable if a few cloves have been placed in a tumbler over night, and had boiling water poured on them, so as, in fact, to make a weak clove tea. A good way of keeping the bowels in order is to indulge in a little extra fruit, and the best time to take it is an hour or so after breakfast. Apples are rather heavy, but a nice ripe pear or a couple of oranges will often succeed admirably. Grapes, currants, blackberries, and barberries may be indulged in for a change. Many people like bananas. Roast apples and stewed prunes are much better suited than pastry as a second course in the condition now under consideration. Some people like stewed prunes with meat. Figs can be eaten either cold or in a pudding. Green vegetables should be indulged in freely, and watercresses, dandelion, and lettuces may be eaten *ad libitum*, provided only that they can be obtained fresh. Two tea-spoonfuls of salad-oil taken at bed-time will prevent that drying and hardening of the contents of the bowels which is so frequently a source of inconvenience. When these remedies fail it is a good plan to substitute coffee for tea at breakfast, and brown bread for white. Porridge is an excellent breakfast for those who like it. The coarsely-ground Scotch oatmeal should be used. "Mix two table-spoonfuls of it with a small tea-cupful of cold water, till it is of uniform consistence. Then pour in a pint of boiling water, and keep boiling and stirring it for forty minutes. It is then fit to eat, but may be kept simmering till wanted if a little more water be added as the other steams away. It should be served in a soup-plate quite hot, and cold milk added to reduce it to an eatable temperature." With these means at our disposal no difficulty should be experienced with the bowels.

The fact will be at once recognised that the number of years a man happens to have lived in this world is no guide to his real age. Some people are still young at sixty; others are old at forty. We do not all live at the same rate, some live slowly and quietly, suffering but little wear and tear; others live fast, and soon find that the pace tells. Nowadays we live faster than we did a century or two ago. If one of our ancestors were suddenly resuscitated and made to undergo the toil and mental labour we do, he would soon give in. The life of an intelligent man, who would keep on a level with his compeers of the present day, is equivalent to at least a dozen lives of a former age. What is expected of mere boys in this competitive age was not required of wise, full-grown men of old. Take the example of a senior wrangler. Even Newton ignored the scope of mathematical science which a senior wrangler must now possess, and how hard such men must work and over-work themselves is evident from the small number who are ever heard of again, or succeed in the real battle of life. They are "played out" before they are thirty, and one feels inclined to agree with the common remark that a senior wrangler is generally one of the worst educated men in England. Few of the successful men of this or any other age rest upon the laurels gained in their early years, and under the exhaustive modern system few or none, after success in examinations, have energy enough left to begin the real work of life. Most of them are content with the honours they have gained, and sink back breathless with the effort. There can be no doubt that at present society is following a course which must inflict irretrievable damage upon our children, and those who are to come after them. Health and education do not go as they ought to go, hand in hand. "The whole head is sick, and the heart faint;" for as the frantic passion for over-instruction affects the body it reacts upon the mind. The child who has been a victim to excessive education during the period of immaturity is never intellectually strong, and is generally feeble in physique, in adolescence, and early manhood. In these days there is a strain after knowledge, a frenzy of emulation in acquirement, such as the world never saw before. The world has produced great men in abundance in every generation, in every sphere of activity, in every combination of circumstance. But always, hitherto, the one indispensable condition was present, the condition of unfettered development. The appearance of the great men of the past in literature, art, and science, was natural, because nature in their case was free and untrammelled; but the appearance of such men in similar greatness under the present educational system is well-nigh impossible. The theory, or at any rate the practice, of modern education is to supply an unlimited quantity of knowledge in early life, when both the mental and the physical powers are immature. It is like trying to improve the healthy action of the stomach by a system of over-eating.

Symptoms of over-work and premature old age are often seen in quite young children. Children are set to study even before they have learned to play. Before the age of seven a child's work should be principally play, though play judiciously guided and varied, as it is under the Kindergarten system, may be made to impart a great deal of useful learning, without resort to a book or formal lesson. Too often we find that children from the tenderest age are kept at school for six hours a day, and have lessons to prepare at night in addition. Only the other day we saw in the hospital a little girl, aged thirteen, who was suffering from St. Vitus's, which had undoubtedly been brought on by over-work. She was attending a school where she was taught "French, physiology, grammar, analysis, British history, writing, spelling, arithmetic, freehand drawing, needlework, and maps," besides several other subjects of which she had forgotten the names. She was a day scholar, and had lessons in the morning from nine till twelve and again in the afternoon from two till half-past four. Besides this she had work to do at home. She began again directly after tea, and worked up to ten or eleven at night. She had been doing this for over a year, and during that time had hardly had a day's holiday. If this is not cruelty, we do not know what is. No doubt some of these poor little unfortunates grow up precocious, and are thought by their proud and doting parents to be "clever." But the results are no longer any matter of doubt.

These precocious, coached-up children are never well. Their mental excitement keeps up a flush, which, like the excitement caused by strong drink in older children, looks like health, but has no relation to it. Their tongues are furred; their appetites are capricious; all kinds of strange foods are asked for, and the stomach never seems to be in order. If an over-worked child continue to be over-worked, more alarming physical symptoms quickly appear. The frequent flush gives way to an unearthly paleness; the eyes gleam with light at one time and at another are dull, depressed, and sad, and are never laughing eyes. The brightness is that of thought on the strain, and it often presents a dangerous phenomenon. The muscles are flabby; the sleep is restless, and disturbed with nightmare, or perhaps somnambulism.

As the victims of over-education grow up to boyhood or girlhood these physical evils are complicated by others of a moral or intellectual character. "Clever" boys and girls, but especially boys, continue to be over-worked, and in the period of approaching and attaining puberty, over-work hurries thousands of unrecognised victims to the grave. No farmer would think of over-working a growing horse, and yet parents and teachers combine to drive lads and lasses between thirteen and eighteen into an endless series of competitive examinations, the severity of which is every day increasing. Sometimes a mistake is made in not recognising the natural quality or bent of the pupil's mind, and still more frequently irremediable injury is done to his spirit in sending him into a competition in which he stands not the ghost of a chance. These intellectual gymnastics are a great mistake. Even the successful are deeply to be pitied. The prize system is bad fundamentally. In the matter of health, that system stands at the bar guiltiest of the guilty. We have but to go to a prize distribution to see in the worn and languid faces of the successful the effects of the system, and there we do not see a tithe of the evil; we have not seen the children before the competition, nor do we see them after it, nor between the competition and the announcements of the awards. If we could see all the changes incident to these events, we should see what a mad system it is, and should understand how much the dull are to be envied, rather than the successful and the flattered and triumphant. We must all regret that a knowledge of these facts is not more widely distributed.

The symptoms of premature old age in the adult are not difficult of recognition. They are in the main those of exhausted nervous power, that is to say, general debility of the body, inability to walk even short distances without fatigue, a feeling of languor and unwillingness for exertion of any kind. In addition there are well-marked mental symptoms, and generally some previously unnoticed peculiarity develops itself in the character of the affected person. A man formerly generous and reticent may become intensely selfish and garrulous. Without any apparent reason he takes likes and dislikes to those with whom he is associated, especially to his best friends and nearest relatives, whose motives he invariably insists on misunderstanding. He is subject to uncontrollable fits of moroseness and bad temper. A previously careful man becomes usually liberal, even extravagant. A man who all his life has been remarkable for his modesty and retiring disposition puts off all reserve and makes himself intensely disagreeable to everybody, or does something that astonishes beyond measure all who know him. Not infrequently in this condition there is an utter inability to fix the attention on any one subject. Even in reading, the thread of the story or argument is lost. The memory becomes strangely defective, and is often so bad that when the unfortunate patient leaves the room to go to another to fetch something, he has quite forgotten all about it on his arrival there. You may find him, too, on his hands and knees searching on the carpet for something he has just dropped; ask him what he is looking for and it is ten to one that he will not remember. Sometimes not only is there an entire inability to arrange the ideas in order, but the judgment becomes curiously perverted, a serious matter when the subject of this change holds a position of trust and responsibility. Sometimes a remarkable indifference to veracity becomes manifest in persons previously noted for their truthfulness, and in others we find a craving for strong liquors, which they find it well-nigh impossible to resist. Often enough there is an undue excitability of the senses, the hearing, for example, becomes intensely acute, so that the noise of a door slamming in the street is almost unbearable. Then the sight may become strangely impressionable, bright colours are intensely disagreeable, scents are odious, and the taste is completely altered.

There is only one treatment for the condition that we have described, and that may be summed up in the one word, "rest." When a man is living too fast, when he is suffering from constant worry and anxiety, when he is wearing himself to pieces, there is only one thing for him to do, and that is to stop. It is of no use for a man to say that it is impossible for him to pull up, for he must, or he will very soon find that he will break down completely and entirely. A six weeks' holiday, if taken in time, will often set a man on his legs again, and enable him to go on with his work for months, or even years; but should he fail to take Nature's warning, she will have her revenge, and he may have to pay dearly for his temerity. Sometimes something may be done in the way of obtaining a temporary change of employment. For example, the over-worked doctor may get a travelling appointment with some rich patient, or he may be able to exchange the worries and anxieties of practice for literary work. Rest does not so much mean absolute idleness as change of occupation. As adjuncts, bromide of potassium (Pr. 31) or phosphorus (Prs. 53 or 54) may prove useful, but the real and only true treatment is rest. If you are pulled down from any cause there is nothing like taking a holiday, and there is no surer means of warding off that complaint of which we are all so much afraid—"old age."

It must be understood that it is not work that we condemn, but over-work. We should be the last to underrate the importance of real honest work. In fact, a certain amount of work is necessary for the maintenance of health. The enervating effects of inactivity upon the physical structure and energies of mankind few can have failed to observe. Rust is more fatal to metal than wear. A thoroughbred racer, if confined in stable or paddock, or a boxer, born of the finest muscular make, if permanently incarcerated in gaol, will, after a few years, become quite unable to compete with those vastly their inferiors in natural endowments and capabilities. This is equally applicable to the temper and intellect of man, which, secluded from the scenes of appropriate stimulus and exercise, become relaxed and weakened. What would have become of the glorious spirit and powers of Achilles if his days had all melted away in the tender, delicate, emasculating inactivity and indulgence of the Court of Lycomedes? Work, then, but work in moderation, and work judiciously.

XXVII.—NURSES AND NURSING.

EVERY physician recognises the importance of good nursing. In the treatment of disease medicinal agents are necessary to combat the various symptoms as they arise, but it is equally important that the surroundings of the patient should be so arranged that he may be supported and tided over the critical period of his illness. It is not too much to say that in many illnesses good nursing is more than half the battle. When a man is seriously ill he is practically as helpless as a child, and can neither think nor act for himself. He is fortunate should there be some friend or relative who will take the initiative for him, but there are many people—often men in good social position—who have no one about them whom they would care to trust. The sick man sends for his doctor, and nurses are provided on whom rests the responsibility of seeing that he is properly cared for, and that no advantage is taken of his helplessness. The trust is a sacred one, and for the honour of the nursing community is rarely or never abused.

By a sort of tacit understanding nursing is generally, we may say almost universally, regarded as a woman's vocation. It is very desirable that the nurse should be a young woman, and both in hospital and private practice, women are employed both in the female and in the male wards. There are, it is true, men who adopt nursing as a calling, but compared with the women they are few in number. The so-called "male nurse" partakes more of the nature of the valet or attendant than of the nurse proper. In exceptional cases where a patient is extremely violent and cannot be controlled in any other way, the services of a man may be found necessary, but practical experience shows that a delirious patient is far more likely to be quieted by the gentle touch of a female hand than by any mere exhibition of physical strength. Whilst recognising the occasional utility of a man as a nurse we are inclined to think that the occupation is one which is more safely left in the hands of women. The following remarks apply almost entirely to the female sick-nurse, and are not applicable to the male attendant, or to the nurse or nursemaid who is entrusted with the care of healthy children.

SOCIAL STATUS OF THE NURSE.—The social status of the sick-nurse has undergone many curious changes during the last twenty or thirty years. Twenty-five years ago a trained nurse was a rarity, and when sickness broke out in a family the patient was usually nursed by a relative with the assistance of an old servant or a superannuated charwoman. Even in our large general hospitals the state of affairs was not very much better, and the nursing staff consisted chiefly of uneducated women who, however well-intentioned, were practically untrained. They were in the main honest and trustworthy, the only serious charge that could be brought against them being that they were addicted to the use of spirits, and had a constant habit of sampling the patient's whisky or brandy.

A NURSING SISTER.
(*From a Photograph by A. Foster, Brighton.*)

Suddenly a marvellous change took place; the old-fashioned nurse was ousted from her position, and nursing was raised to the dignity of a "profession." It was the popular fad of the day, and women all over the country became "nursing mad." They abandoned their household duties and eagerly sought for admittance into the various training establishments. They donned more or less appropriate costumes, and astonished their stay-at-home sisters by the facility with which they employed abstruse medical terms, and by their gruesome stories of the horrors of the operating room and wards. Their enthusiasm was so great that they willingly paid heavy premiums for instruction, taking little care to ascertain whether it was good, bad, or indifferent. The demand created a supply, and nursing institutions of all kinds sprung up all over the country, some of them undoubtedly supplying a want, but many of them serving simply to bring grist to the mills of their astute promoters. Although the system was, no doubt, in many respects faulty, the result was beneficial in this sense that good nurses of high character were to be obtained without difficulty.

Of late, however, there has been a decided reaction, and nursing can no longer be regarded as a lucrative calling. It has to a very great extent ceased to be fashionable, and so far the change is not to be regretted. There are those, however, who hint that the *moral* of the class as a whole does not stand on quite so high a level as before the reaction set in. Such critics account for the retrogression which they believe themselves to have observed partly by the fact that the market is overcrowded, and that constant work is difficult to obtain, and partly by the fact that the nurse is accorded an amount of liberty which is somewhat unusual in the case of other young women. When she has completed her training and leaves the hospital she may commence nursing on her own account, and in these circumstances, when she is not actually fulfilling an engagement, she is from the nature of the case under no supervision. Such critics would certainly admit that in the vast majority of instances the emancipation from control leads to no abuse, while, on the other hand, those who hold that the criticisms are ill-founded will not deny that such freedom as this may not be altogether unattended with danger. On the whole, however, the modern nurse thoroughly merits the high estimation in which she is held, and it goes without saying that in the ranks of the sisterhood may be found characters of the very highest type. No one can assert that the average nurse is not faithful and attentive in the performance of her duties, and the severest of her censors will concede that she is an immense improvement on the nurse of thirty years ago. It is almost an insult to her, indeed, to mention the two types in the same sentence.

THE NURSE'S QUALIFICATIONS.—The qualifications required to be a successful nurse are necessarily of a high order, and this applies not only to the trained nurse but to her embryo sister who wishes to adopt nursing as a calling.

In the first place she must be not only physically but constitutionally strong. She must be not only well formed, but must have certain powers of resistance. A girl, for example, who is subject to sick headaches, or who readily "knocks up" will never make a good nurse.

The best type of nursing girl is one who is tall and strong, and who has a certain suppleness of movement. One who is accustomed to play lawn-tennis, and who can ride, and skate, and row, makes the best material. If she can dance, and especially if she is an enthusiastic dancer, it is a great advantage, for graceful carriage is a thing to be cultivated, and nothing is more distasteful in a sick-room than a suspicion of clumsiness. If in addition to being well formed she is favoured with good looks, it is all in her favour, for doctors readily recognise the influence of an attractive person in the management of refractory patients.

A nurse who aspires to rise in her profession should have a soft and evenly modulated voice, for harsh notes jar on the ears of sensitive patients. With regard to her general education she must be able to speak her own language correctly, and if she has a smattering of French and German so much the better. She should be able to write a good hand, and should have an elementary knowledge of how to keep accounts. Respecting her moral attributes, it may be said that a girl who has been brought up in a country parsonage, and has had little experience of the world, is hardly fitted for hospital work. In the wards she will be brought in constant contact with people of various modes of thought, and if she is unable to adapt herself to her surroundings, her novitiate will of necessity be a very uncomfortable one. It is true that the embryo nurse rapidly acquires knowledge, but if she has strong views and prejudices she will soon find that her life is not an easy one. This is still more the case in private practice, for people when they are ill are not tolerant of opinions which are not in accordance with their own. A nurse has to learn the very useful lesson that she is not a reformer of other people's morals, and that her highest claim to consideration and respect is that she carries out her duties conscientiously.

Nursing should not be undertaken from sentimental motives, or from any notion of becoming one of the "Guardian Angels" of the novelist. Such an idea will assuredly end in disappointment, for it will be found that the really sick have but a poor appreciation of sentiment, that the routine duties of the sick-room are monotonous and tiresome, and leave but scant time for indulging one's imagination or poetic feelings.

It is hardly necessary to say that a nurse should be honest and truthful, for the vast majority of English nurses possess these qualifications in the very highest degree. When a man living alone, say in chambers, is suddenly taken ill, he must of necessity be nursed, and almost equally of necessity the nurse has to be given charge, not only of his expenditure, but of his personal effects. The nurse is commonly a perfect stranger to him, and although this responsibility arises in thousands of cases we have never heard of a single instance in which the slightest suspicion of dishonesty or unfair dealing has arisen. The only danger to the patient is entirely of another character, for it sometimes happens that the invalid during his long period of convalescence, becomes so enamoured of his kindly attendant that he finds it impossible to dispense with her services, and marries her.

AMATEUR NURSES.—There is a decided prejudice against amateur nurses, but if there is a young woman in the house who is willing to learn, it is astonishing how quickly she can be taught by a doctor who is accustomed to teaching, and who has those personal characteristics which are so essential for the formation of good pupils. If the doctor will teach, and the pupil is intelligent and willing, a very serviceable nurse may be improvised in a few hours. There is no particular mystery about nursing, and the technicalities are easily acquired. If the raw material is there it can be knocked into shape very readily. In cases of emergency it is wonderful how much can be accomplished by a little mutual good understanding.

Relatives always make worse nurses than those who have no such tie to the patient, especially if they have had no previous training. They cannot be expected to regard with the necessary calmness the suffering of one to whom they are tied by bonds of friendship and consanguinity, and there is nothing more trying to an invalid to see constantly around his bed the too-anxious countenances of his family, the doleful expressions of which are often the cause of a needless and mischievous sensation of alarm. Again, relatives have not the necessary control over patients; and one often sees the strength of an invalid wasted by little peevish family squabbles over food or medicine, which would have been taken without question if offered to him by a nurse with authority on her side. Invalid children are proverbially naughty and perverse with their parents, and invalid parents are usually unwilling to be controlled by their children.

TRAINING.—A young woman who wishes to be trained as a nurse usually applies to the lady superintendent of one of the nursing homes connected with a London or provincial hospital. She is furnished with a code of rules and regulations, and is required to sign an agreement before being admitted as a probationer. This agreement is often of a very stringent and arbitrary nature, and it is never safe to enter into such an engagement without first submitting the document to a solicitor or a business friend. If any objection is offered to this course it may be pretty safely assumed that the contract is of such a nature that it will not bear investigation. It must be remembered that it is not the hospital which undertakes to train nurses, and that the nursing establishment is merely a trading concern, which has an agreement to provide the hospital with a certain number of nurses at a price. The nursing institutions are not in any way charitable bodies, and do no gratuitous work, so that they have no real claim on the public. They sometimes appeal for support on the ground that they nurse the sick-poor in our hospitals, but they are liberally paid for their services, and have many privileges given them. Many of them are not above "sweating" the nurses, and derive a handsome profit from the transaction. They pay the nurse from £16 to £25 a year, according to her proficiency, and do not hesitate to charge from two to three guineas a week for her services.

The age at which a nurse should begin her training is a matter concerning which there is some difference of opinion. One authority thinks that the best age is between twenty-five and thirty. This is an entire mistake, for a person who attempts to enter a business or profession at the age of thirty rarely does much at it. Twenty-one is a good age to begin, and forty is a good age at which to retire. A woman is much older than a man at the age of forty, and by that time a woman should have made some permanent provision in life for herself. Few doctors will employ old nurses, and few patients care to have them.

At most hospitals paying probationers are received. The charge varies from £30 a year to a guinea a week. Non-paying probationers are considered to be proficient at the expiration of twelve months. They are usually required to sign an agreement containing a clause, that "during the three years succeeding the completion of their training, they will enter into service as hospital or infirmary nurses in such situations as may from time to time be procured for them by the committee." On inquiry it will usually be found that "the committee" is not the committee of the hospital, but the committee of the nursing home.

The nurse's wages vary somewhat in different institutions, but in all they are small. For example, at St. Bartholomew's Hospital they are £8, £12, and £20; at King's College Hospital the wages are none the first year, £15 the second year, and £20 the third year; at the Paddington Green Hospital for Children the wages are only £8 a year. In most hospitals a nurse receives about £40 for four years' work, including, perhaps, some trifling addition for uniform.

In most of the regulations we note that the nurses "pay their own laundry." In one institution, however, it is stated that there is "an allowance of two shillings a week for washing," a sum which is certainly inadequate.

In many of the agreements there is a clause to the effect that "probationers will be subject to be discharged at any time by the matron in case of misconduct, or should she consider them inefficient or negligent of their duties." The expression "at any time" seems to imply that the unfortunate woman may be dismissed at a moment's notice. Nothing is said about any right of appeal to the managing committee, and the matron is evidently entrusted with full powers.

The hours of duty for nurses vary somewhat in different hospitals. In the Guy's Hospital regulations we find the following note:—"Hours on duty twelve; two and a half hours off duty every alternate day, and half a day once a month." At the London Hospital the hours on duty are given as twelve. At St. Thomas's Hospital the day nurses rise at 6 a.m., and retire to rest at 10 p.m., but they are allowed an hour and a half for exercise in the middle of the day.

At Guy's Hospital the holidays are two weeks a year, and at the Hospital for Sick Children in Great Ormond Street, London, there is the same allowance. The usual allowance seems to be from two to three weeks.

We are inclined to regard these regulations somewhat unfavourably, as they are evidently drawn up entirely in the interest of the training school, and without much regard to the welfare of the nurses and probationers. When we find that the nurse is required to sign an engagement for four years at an average of £10 a year, with twelve hours' work a day, and only fourteen days' holiday in the year, we cannot help coming to the conclusion that the lot of a nurse in a hospital, with the exception of the glamour which attaches to it, is far worse than that of an ordinary domestic servant.

THE NURSE'S DRESS.—The nurse must be cleanly in her person, both for her own safety and for the sake of those with whom she comes in contact. Her dress should be simple, but by all means let it be becoming. Many ladies who take to nursing think it necessary to assume the most hideous garb imaginable. If the exigencies of religion necessitate this course, we regret our inability to argue the case, but on medical grounds we feel quite sure that the dress of an attendant on the sick should be simple and becoming, and not such as will excite the wonder, the fear, or the risibility of a patient. The dress should be just long enough to clear the ground, and should be made of printed calico, or some other *washing material* of a light colour and a smooth surface. Moreover, it should be frequently washed. Some of the nursing sisterhoods adopt a robe made of black flannel with long hanging sleeves. Nothing can be imagined more ill-suited for a nurse's dress. The blackness of it prevents the ready detection of dirt, the rough surface and absorbent texture is ready to catch and suck up all disease particles, whether dry or liquid, and the dangling sleeves and floating stole and girdle are certainly likely to hitch in every projecting object, and as they fulfil no useful purpose, it is difficult to see why they should be retained. Some of these lugubrious dresses are worn, too, for as long a period as were the hair shirts of the mediæval hermits. We have heard a sister boasting of the grimy penance to which she had subjected herself for more than six months.

It is to be regretted that ladies who perform their duties with so much zeal and with the highest possible intelligence, should run the risk of marring much of the effect of their good deeds by adhering to a fashion of dress which ought to have died out with the Middle Ages, and before the dawning of the science of hygiene.

A nurse should wear a neat cap, and should be careful to have shoes which do not creak. A pair of scissors and a pin-cushion carried from a girdle will be found also of the greatest service. It is customary with many nurses to carry with them a small pocket case filled with instruments, such as scissors, dressing forceps, caustic holder, tongue depressor, and so forth, but these things are intended only for show, and are quite unnecessary.

THE NURSE'S OUTFIT.—A nurse requires some kind of an outfit, but it need be of the most inexpensive description. A clinical thermometer in a metal case can be obtained for 2s., scissors with blunt or sharp points are 2s. 6d. a pair, a grooved director with scoop costs 1s. 9d., and a silver probe with an eye or sharp point 1s. If the nurse chooses to indulge in the luxury of a case or wallet, she can get it complete, filled with a variety of instruments, for 19s. 6d., and can have her name stamped on it in gold letters for 1s. extra. "Silent shoes" for use in the sick room are a little bit more expensive, but are supplied by most bootmakers at a price ranging from 6s. 6d. to 10s. 6d.

EXAMINATION FOR NURSES.—At many hospitals nurses are required to pass examinations. We have had an opportunity of inspecting some examination papers, and we must admit that some of the questions do not impress us with a sense of their utility. We give one or two examples:—

1. What is meant by (*a*) hydrocarbon diet, and (*b*) diabetic diet? Explain something of the principles on which these diet tables are constructed in relation to the diseases for which they are prescribed.
2. Describe in full the principles of central galvanisation.

Such questions as these as applied to the training of nurses, are not only useless, but border on the farcical. In a recent work on nursing which deals with the practical side of the question, we find the following common-sense view of the subject, which we commend to the so-called "authorities" of nursing establishments:—"Instead of a nurse leaning over a bed and holding the cup of cooling drink to the fevered lips, we have a vision before us of a frantic probationer with her fingers in her ears bent double over a dirty old copy of Kirke's 'Handbook of Physiology,' and the second picture is as true as the first."

HOSPITAL LIFE.—There is good reason for supposing that in many of our large hospitals the nurses are badly housed and decidedly underfed. A few years ago a commission was appointed with the view of investigating this question, but curiously enough many of the nurses, although evidently holding strong views on the subject, declined to afford any information, being evidently afraid of offending the authorities. One nurse wrote:—"I am sure, from what I have heard, that the matron would not wish me to begin joining in the discussion now made public, and knowing so well her views on the subject, I think it would be neither loyal nor right to take, in ever so small a way, a part in the matter." Sentiments such as these are in a sense praiseworthy, and reflect much credit on the writer, but at the same time it must be remembered that a hospital is a public institution supported for the most part by voluntary contributions, and that those who contribute their money have a perfect right to inquire into the truth of rumours, and that the proper feeding of the nurses is as much a matter for concern and, if necessary, public investigation, as the care and welfare of the patients themselves. A public institution should have nothing to hide, and if there is a suspicion of abuse, the sooner the wrong is righted the better for all concerned. If people will not help themselves, it is hardly likely that others will do it for them.

Some nurses, however, were not so reticent, and expressed their views freely and in no measured terms. One of them wrote:—"At times the cooking has been very bad, quite spoiling and wasting the food." Another said:—"A little more attention to the cooking and serving of the food would render it much more appetising without additional expense. The monotony of the diet and not the quality is distasteful to the tired nurse." The *Lancet*, commenting on these statements said:—"This is obviously a very serious grievance, and one, moreover, that need not exist at all. An efficient cook is much less expensive than an inefficient one, for bad cooking means waste."

The fact is, that a large hospital is a very complex institution. What is the business of many people seems to be the business of no one. In the first place, there is the cook with a staff of subordinates. The cook is responsible to the steward, and the steward is responsible to the secretary, who, in his turn, is responsible to the house committee which meets once a week and is appointed at the annual meeting of the governors. The house committee is usually composed of a number of individuals who are personally actuated by the very best principles; but the majority of whom know little or nothing about household management, and despise such trivialities as good cooking. If the house committee does not move the secretary, he naturally enough does not move them, for as a salaried official, he prefers a life of peace and quietness, and endeavours to make things work smoothly. The nurses themselves are not organised, and are under the thumb of the matron, who promptly suppresses any expression of discontent. If any individual nurse were to take action, and appeal to the house committee, she would receive very little support, and would probably be told that she was "not strong enough for the work." The resident staff of the hospital—the house physicians and the house surgeons—are as a rule none too well fed, but they are in constant touch with the permanent staff of the hospital, and have a habit of expressing themselves strongly and effectively if their wants are not attended to. They are a fearless body of young men, who have before now been known to champion the cause of the nurses, and make a strong fight on their behalf.

Whatever difference of opinion there may be respecting the feeding of the nurses, there can be no doubt that in nearly all our hospitals they are disgracefully overworked. The universal custom is to have only two "shifts" in the twenty-four hours, so that at the very least each nurse is on duty for twelve hours at a time. As a matter of fact, the nurse rarely goes off duty the moment she is relieved, as she has to make up her report, and hand over her instructions for the care of the patients to her successor, so that it not uncommonly happens that her twelve hours are extended to thirteen or even fourteen. The twelve hours' system is a cruel strain on the strength and nerve of a woman. One nurse who was interviewed on the subject said: "In my opinion the chief evil of the present system of nursing is the long hours the nurses are compelled to be on their feet, and there will be no remedy for that until the day is divided into three parts of eight hours with three relays of nurses. The night nurses are especially hard worked, for they are on duty twelve hours, and in the medical wards often have not the chance of sitting down even for half an hour; then after a hard night they have beds to make, washing of patients, dusting and breakfast to prepare and to give to each patient." Another says: "Fourteen hours of work, which not only includes hard manual, but also responsible and anxious work, is, I consider too much for any woman. I have now worked in a hospital for over a year, and my experience is that the whole cry of nurses off duty is, 'Oh! I am so tired!' Should this be? Should a nurse off duty feel so worn out as she does? I quite think that the eight hours' system should be introduced in hospitals. Why should not some little bit of the charity which is so freely given to the patients be extended to the nurses?"

Another very decided grievance is the shortness of the annual holiday. The usual allowance is two weeks for a probationer, three for a staff nurse, and four for a "sister." A probationer in one hospital where the leave of absence is only ten days in the year, says: "The committee will not hear of our having a longer one. When one spends two days in the train, as some of us have to do, it leaves us with eight days, and to spend about £3 on it seems waste." Considering that the poor girl's salary would in all probability be no more than £16 a year, her complaint is not altogether an unreasonable one. The difficulty would be easily overcome by slightly overstaffing the nursing department, instead of understaffing it, as is so commonly the case in even our most wealthy institutions. It is said that the moral tone of our nurses is undergoing deterioration, and it is hardly to be wondered at when we find that they are overworked, underfed and not allowed reasonable time for rest and recreation. Year after year many promising young women break down and abandon their calling, and drift into a mode of life which seems to promise greater ease and luxury.

MONTHLY NURSES.—The monthly nurse, like her sister the general nurse, has of late years materially improved both in character and position. Many general nurses undertake monthly cases, but no nurse should be employed for this purpose who attends surgical cases or cases of infectious disease. Many monthly nurses undergo a course of general training in nursing at a hospital, whilst others are content to acquire the special knowledge required at one of the lying-in hospitals which are to be found scattered throughout the country. The following is a summary of the regulations issued by the Queen Charlotte's Hospital, London, and they may be taken as typical of those in force at other similar establishments:—

1. The Committee of Management receive a limited number of women of good character, to be trained for Monthly Nurses in the Wards of the Hospital. Such Pupils enter on their training on Mondays.

2. Candidates may be single, married, or widows, must not be under 21 nor above 40 years of age. The term of training is not to be less than eight weeks, but twelve weeks are recommended.

3. Pupil Nurses will be under the authority of the matron, and subject to the Rules of the Hospital. They will serve in the Wards, and receive instructions from the Matron and Sisters. In cases of misconduct or neglect of duty they will be suspended by the Matron, who will at once report the same to the Physician-in-Charge, and will be liable to be discharged by the Committee of Management or Visitors without notice, and to forfeit their fees.

4. Pupil Nurses must provide themselves with white washing dresses, caps, and aprons, and pay for their own washing. The caps and aprons must be of the Hospital uniform pattern.

5. The fees are Ten-and-a-Half Guineas for eight weeks, and Fifteen Guineas for twelve weeks, inclusive of a Course of Lectures, and include Board and Lodging.

6. On the completion of the term of pupilage, each Pupil Nurse, provided she proves herself competent to discharge the duties of Monthly Nursing, will receive a Certificate. They will not receive a Certificate if found unfitted for the duties of a Monthly Nurse at the end of their training.

MIDWIVES.—Many young women of good education and social position find it more advantageous to be trained as midwives than as nurses. The work is for obvious reasons less popular than nursing, but amongst the poor the services of a skilled midwife are often very acceptable. The following is a summary of the regulations relating to the training of midwives in force at the Queen Charlotte's Hospital, London:—

1. The Committee of Management receive a limited number of women of good character, to be trained for Midwives in the Wards and Out-patients' Department of the Hospital. Such Pupils enter on the first day of each month. The term of training is not to be less than three months.

2. Candidates may be single, married, or widows, must not be under 21 nor above 40 years of age.

3. Pupil Midwives will be under the authority of the Medical Officers and Midwives, and subject to the Rules of the Hospital. They will serve (both in the Hospital and in the Out-patients' Department) under the Hospital Midwives, and receive instruction from the Medical Officers and Midwives. They will not be permitted to enter the Lying-in Wards unless accompanied or by direction of the Medical Officer. In cases of misconduct or neglect of duty they will be at once suspended by the Resident Medical Officer, who will report the same to the Physician-in-Charge, and will be liable to be discharged by the Committee of Management or Visitors without notice, and to forfeit their fees.

4. Pupil Midwives must provide themselves with washing dresses, caps, and aprons, and pay for their own washing. The caps and aprons must be of the Hospital uniform pattern. No Pupil shall enter the Wards except in a washing dress, and she shall always wear the uniform dress while in the Hospital.

5. The fees are £26 5s. for three months, and include Board and Lodging.

6. On the completion of the term of pupilage, each Pupil will be examined, and provided she proves herself competent to discharge the duties of a Midwife, will receive a parchment Certificate; but such Certificate will not entitle her to undertake the medical treatment of cases, nor the management of complications in labour. They will not receive any Certificate if found unfitted for the duties of a Midwife at the end of their training.

THE NURSE'S REPORT.—The nurse must keep a diary and make a note of everything that passes in the sick-room, taking care to record every event at once. In this way she will greatly assist the medical man, and will be the means of saving much valuable time. Every action of the bowels, every administration of food, and every dose of medicine should be carefully noted down. The following are samples of the kind of reports which a nurse is expected to keep:—

NIGHT REPORT—April 10th, 1895.

9.0 p.m.—Subcutaneous injection of one-sixth of a grain of morphine.

Sound and refreshing sleep from 9.30 to 12.30.

12.30 a.m.—A small tea-cupful of arrowroot.
This was followed by free perspiration.
Very restless till 4 a.m., when there was a copious loose action of the bowels.
4.30 a.m.—A dose of medicine.
Slept tranquilly from 5 till 7 a.m.
Coughed two or three times during the night. No expectoration.

Day Report—April 11th, 1895.

9.30 a.m.—Loose action of the bowels.
10.0 a.m.—Four ounces of beef tea, with six drachms of brandy.
11.0 a.m.—Medicine.
11.15 a.m.—Loose action of the bowels.
12.25 p.m.—Ditto.
12.30 p.m.—Beef tea and brandy.
1.0 p.m.—Another action of the bowels.
Complained a good deal of pain in the abdomen.
2.15 p.m.—Bowels acted again.
2.30 p.m.—Starch and opium enema, as ordered.
3.0 p.m.—Cup of arrowroot with six drachms of brandy.
Dozed almost continuously till 7 p.m., when medicine was administered, and a draught of milk and soda-water was taken. No cough to-day. No perspiration.

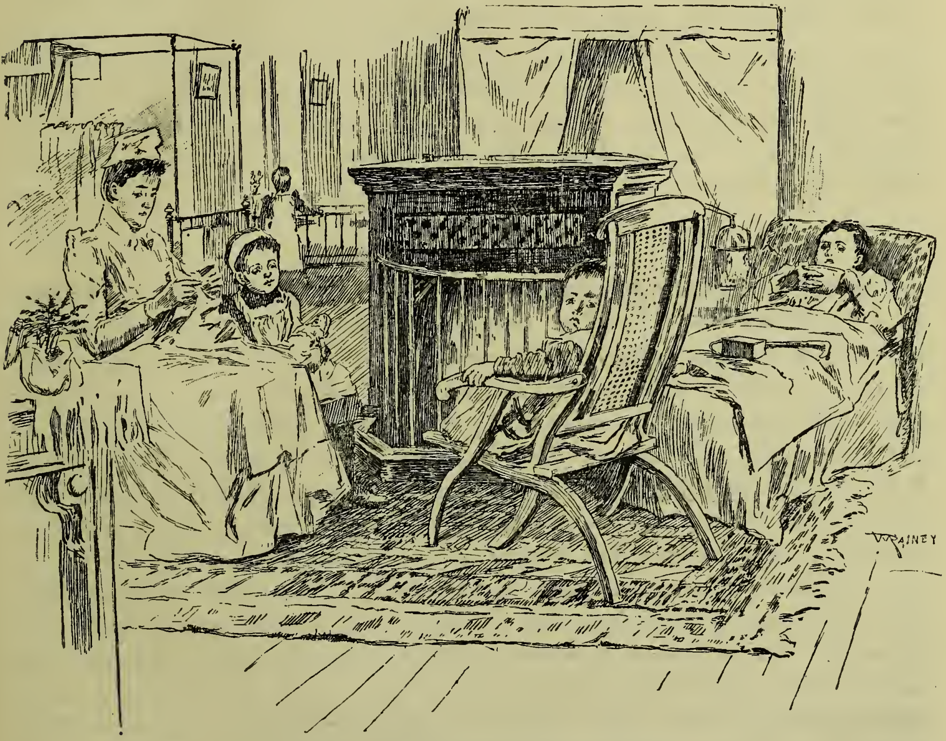
To keep such a record as this would naturally require a fair amount of proficiency. But the principle of the thing, which is what we wish to insist on, holds good throughout; and even in the domestic circle each occurrence in the sick-room should be recorded at once. There must be no trusting to memory, for in case of forgetfulness justice may not be done either to the patient or his medical attendant. Thus—

April 12th, 1895.

9.0 a.m.—Breakfast—egg, dry toast, tea.
10.30 a.m.—Bowels acted naturally.
11.0 a.m.—Medicine, and a cup of beef tea.
2.0 p.m.—Dinner—minced chicken, custard pudding, one glass of port wine.
Dozed till 4.
5.0 p.m.—Mrs. A. called and stayed half an hour.
5.30 p.m.—Medicine.
Slight pains in the bowels.
7.0 p.m.—Cup of arrowroot, with two table-spoonfuls of brandy.
Slept soundly all night.

The patient's temperature should not be entered in the report, but should be marked on the chart provided for that purpose.

The preceding may be looked upon as fair samples of the kind of record which it is advisable to keep, but no nurse is ever quite expert at this part of her duty until she has had a certain amount of experience, and begins to be tolerably well acquainted with the course and the most characteristic phenomena of different diseases. The nurse who watches the run of a case continuously will have every symptom which the patient presents forced upon her attention, and whatever strikes her attention it is her duty to communicate it to the medical attendant. One nurse will say, "I heard the patient cough once this morning;" and this information may be the means of directing attention to, and ensuring the early treatment of, some complication of the lungs; or if the cough has been due to some little passing irritation of the throat, no harm will have been done by mentioning it, and the nurse will have done her duty. Another nurse, after grave lung mischief has declared itself, will say, "Oh, I heard him cough a little two nights ago, but I thought it was nothing." This nurse will not have fulfilled her duty, and her reticence may have lost her patient some hours of early treatment; and it should be borne in mind that it is always easiest to grapple with a disease while it is in its earliest stages.



A SKETCH FROM THE CHILDREN'S HOSPITAL.

In hospital work a probationer hardly ever has an opportunity of speaking to any of the visiting staff, even in the wards. Any fact noted by the probationer respecting a patient is communicated to the nurse, who tells the sister, who informs the house physician, who conveys the information to the physician. In the same way if the physician wants to ask the probationer a question, he asks the house physician, who asks the sister, who asks the nurse, who then inquires of the probationer. This useless paraphernalia is gone through at every visit of the physicians and surgeons. A few physicians override trivial rules of this kind, but their conduct is always regarded with suspicion, and they are in danger of being accused, either directly or by implication, of being "too familiar with the nurses." Every hospital is the home of red tape.

NURSE'S ACCOMMODATION.—The difficulty of accommodating a nurse in a small household is often very great. She must have a bed-room, and often enough there is no room to spare. She, of course, must never be asked to take her meals with the servants, and should either dine with the family, or what is better, should have her meals sent to her own room. She cannot be expected to be always on duty, and in a severe case two nurses are absolutely necessary. When the nurse has finished her "turn," she is at liberty to do just as she likes, and may go to bed or go out as she thinks best. If she dines with the family the patient's condition should not be made a subject of discussion. The best way is to treat the nurse, not only well and kindly, but liberally. She is always better for change of scene and recreation, and if, when she is off duty, she elects to go to a place of amusement or to enjoy herself in any other way no possible objection can be offered, provided only that she does not put other people to inconvenience.

A nurse in the sick-room wears her nurse's dress, but should certainly not appear in the streets in that guise. Many people have a decided objection to seeing a nurse in uniform leaving their house, and their wishes in this respect must be observed. A few years ago it was common enough to see nurses in their nursing dress parading the streets, but such an exhibition is now far less common, and in the majority of cases it may be safely assumed that when a person is seen walking about in a nurse's dress, that her connection with nursing is of the slightest. At all the best hospitals there is now an understanding that the nurse wears uniform only when actually on duty.

NURSES' GOSSIP.—A nurse must not talk. We do not mean by this that a nurse is to abstain from holding conversation with a chronic invalid, but we wish our caution to apply particularly to those who have the care of acute invalids, to whom talking is an effort, and with whom anything like argument is quite out of place. If food or medicine is to be given, let the portion or the dose be prepared, and when ready offer it to the patient as if there were no question that he were going to take it. Never say, "Will you take this, or try that?" or, "Shall I get your medicine now?" or put similar questions. There is no use in doing it, and if the invalid raise objections, as is often the case, the necessity for argument arises, which is a thing always to be avoided. Inexperienced nurses are very apt to pester and bother a patient with incessant sympathetic questionings, "Are you in pain now, dear?" "Does your head ache?" "Are you lying comfortably?" "Will you have the door open?" and so forth. This is bad. The good nurse watches her patient, and is quick to detect any complaint or sign of discomfort, but her sympathy manifests itself in some action designed to remedy what is amiss, rather than in misplaced expressions of pity.

Nurses often worry their patients almost to distraction by talking about their "cases." Most patients object very strongly to having nursing or medical papers brought into their rooms, and as a rule they take very little interest in hospitals and details of operations.

Nurses, from the peculiarity of their relations to their patients, often become possessed of information regarding them which ought to be considered perfectly sacred, never to be breathed to human ear, and yet how often does the temptation to tell a secret overcome the sense of honour and duty in this case, and these matters become the conversation of gossiping women! Nothing must be withheld from the doctor that can affect the patient's interest, but the nurse should never speak of her patient except in that general way which can hurt no one, and even then, with this exception, she should take care not to indulge in what is called "harmless gossip." Many people consider they may ask questions of nurses about their patients which they would not dare to ask the sick person or his friends. Nurses must be on their guard not to be led to say anything which, were they in the patient's place, they would not like said of themselves. Many people—women particularly—are selfish from want of thought, rather than from want of heart, and many women gossip from mere thoughtlessness rather than to gratify ill-natured feeling. A patient ought to be able to look to his nurse as his best friend for the time being, and to feel that everything concerning his most private life is as safe with her as with himself.

A HOSPITAL NURSE.

THE FEE FOR NURSING.—The charge made for a nurse varies somewhat in different towns and districts. For many years there was a uniform fee of a guinea a week, but of late the price has risen, and it is no uncommon thing to be asked two or even three guineas. The institutions charge extra for surgical cases, for fever cases, for mental cases, for cases of influenza, and in fact for almost any disease that a patient is likely to suffer from. No one objects to pay an extra fee in cases of fever, for the nurse runs an extra risk, and has to go into quarantine for a time, but why an additional charge should be made because the patient is attended by a surgeon, and has to undergo some trifling operation, is not very clear. It will be remembered that the fee is not the only expense, for the nurse must be fed, and will expect an allowance for washing as well as for cab fares and travelling expenses. If the money actually went into the pocket of the nurse it would not be grudged, but as the nurse, as a rule, receives a salary of £25 a year, or even less, there seems to be no particular reason for giving her three guineas a week. There are in some towns co-operative nurses' associations, which pay over to the nurse the whole of the fee minus seven and a half per cent. for working expenses. These associations are popular with nurses and attract the skilled hands. It is usually perfectly safe to deal with them, for it is to their interest to send out only competent people.

Patients at the conclusion of a long illness often ask the doctor if they are expected to make the nurse a present. The answer is decidedly in the negative, the patient pays the full fee for her services, and if she is underpaid by the institution from which she is obtained, he can hardly be expected to make up the deficiency. It may happen, however, that the nurse has been exceptionally kind and attentive, and that the patient is really desirous of giving her some little memento, something that will convey to her in a tangible form his appreciation of her services. There can, of course, be no possible objection to this.

It may be contrary to the rules of the institution, but the patient is not bound by them. He had better take care that the present to the nurse assumes a form that will be personally useful to her, and he must give her to understand that it is for her use and hers alone, and that it is not to be handed over to the nursing home.

THE CHOICE OF A SICK ROOM.—Much of the comfort and peace of mind of a patient during a protracted illness depends on the careful selection of a room in which to be ill. The ordinary sleeping apartment may be quite unsuited for the purpose. It is often a good plan to convert the sitting-room into the sick-chamber. The room should, if possible, face the south, so that the sun may shine in freely. If the patient has the misfortune to be in a room with a north aspect the sooner a change is made the better. It is essential to turn out all unnecessary furniture, and the carpet must be taken up. There must, of course, be a fire-place in the room, not only for the purposes of warmth, but to ensure efficient ventilation. It is convenient to have two rooms, either communicating by folding doors, or at all events adjacent. A screen is handy for keeping off draughts, especially in the winter.

The sick-room should be a large one, not only because the patient never leaves it night or day, but because the air of it is consumed by his nurses and other attendants, besides himself. Directly a patient is well enough to be left alone at night, he should be so left, because the air of a room occupied by one person will keep fresher than when occupied by two. Excepting when a person is very seriously and acutely ill, it is always advisable that the night nurse should remain in an adjoining room rather than in the sick-room, provided that the patient has ready and certain means of communicating with her.

VENTILATION.—One of the first essentials in a sick-room is efficient ventilation. If the room is not well ventilated the patient will make no progress. A sick-room ought always to be so fresh that a person coming from the outside should be unable to recognise any feeling of closeness or any improper smell, but a nurse should be taught that when an open window is impossible, either from the state of the weather or the condition of the patient, that there are ways of ventilating a room without creating a draught.

If the bottom sash of the window be pulled a little upwards, and a piece of board or a sand-bag be inserted between the bottom of the sash and the sill, the air will enter at the opening left between the junction of the two sashes, and the in-coming current will travel upwards to the ceiling, and not laterally in any way. In this way there will be a constant renewal of the air, but no draught will be possible.

A careful nurse will always be on her guard, not only to admit fresh air from without, but also to keep the air of the room as pure as possible. Nothing that can foul the air should be allowed to remain in the room longer than is absolutely necessary. All the excretions of the patient are to be removed with as little delay as possible. No cooking is to be carried on if it can be avoided, and all pungent liquids, such as brandy, wine, or medicine, should be kept in some adjoining room. If food or stimulants be spilt upon the bed-clothes, they should, if possible, be changed, for nothing is so antagonistic to appetite as the sickening smell of spilled wine, brandy, or beef tea. The room should be kept clean, and in order that it may be kept as clean as possible with the least amount of trouble, it is always advisable at the beginning of an illness to disencumber it as far as possible of all superfluous furniture. Carpets, bed-hangings, heavy window curtains, wardrobes filled with wearing apparel, should be removed. A few strips of carpet by the bedside and in front of the fire give an air of comfort, and if these can be thoroughly shaken out of doors every day there is no harm in retaining them. The room should be thoroughly swept and dusted every day, and a good nurse will manage to effect this almost without attracting the attention of the patient. It is necessary that this should be done, and none but a bad nurse will neglect it. Pastilles and strong scents are to be employed as little as possible, and if a room be kept clean this will be seldom necessary. A few flowers growing in pots are a cheerful addition to the sick-room, and the pleasant scent of them—if not too strong—is agreeable to the patient. Such strong-smelling flowers as hyacinth, magnolia, gardenia, or orange-blossom should not be used.

Some people have a prejudice against "night air," and erroneously think that it is to be excluded at any price. Such a notion arises from ignorance; and if the windows be kept open in the manner we have directed, they may be left so throughout the whole of the night.

LIGHT.—At night time it is advisable to burn a light, but it should be remembered that a light fouls the air of a room as much as a living being, and that the presence of a nurse and a light in a sick-room, in addition to the patient, is quite a serious tax upon its power of proper ventilation. A night-light should be as small as possible, and should burn a very small flame. It should be looked upon rather as a means from which a proper light may be obtained in case of necessity, than as a regular source of illumination for the room. A gas-jet turned to its lowest is the best form of night-light; failing this, any of the ordinary night-lights answer the purpose admirably.

Although the daylight is not to be excluded during the day, care must be taken that it is not too obtrusive in the early morning during the summer months. It very often happens that invalids who are restless during the early hours of the night begin to fall asleep and to doze about four o'clock in the morning, and it is on all accounts important to take care that the early sunlight does not disturb the precious morning slumber.

A sick-room should not be unnecessarily darkened. It sometimes happens that an invalid cannot bear the light, or that it is desirable to encourage repose in every way, inclusive of shutting out the light, but if no good cause to the contrary exists, daylight should be freely admitted. Daylight is cheerful, and its free admittance to every corner of a room is conducive to cleanliness. There can be little doubt also that daylight is necessary for perfect health, and that under its influence nutrition is more active. If a sick-room be kept too dark, as very often is the case, it soon becomes very difficult for the occupant of it to bear the light at all, and he becomes markedly sensitive and delicate.

TEMPERATURE.—In this country it is almost always necessary to have a fire in a sick-room. A fire gives warmth, and it also assists ventilation very materially. The fire should be brisk with a bright flame. A sluggish fire backed up with cinders and ashes is of very little use for ventilation. A thermometer should always be kept in a sick-room, and it should be placed as near the centre as possible. The temperature should not be lower than 60° Fahrenheit, and in many cases, especially of lung disease, it is deemed advisable to have the temperature considerably higher. A thermometer is obviously the only safe guide to temperature. The feelings of the nurse or the patient are of little use. It is very important not to let the fire go out or get too low during the night or early morning, which is the coldest time of the four-and-twenty hours. Many a patient with bronchitis has been killed by the negligence of his nurse in this respect.

NOISE.—It is essential that a sick-room should be quiet, but the precautions which are taken to ensure quietness are often quite unnecessary. The straw in the street and the muffled knocker are the familiar insignia of sickness. Sudden starting noises are those which annoy the sick most; while, on the other hand, it is astonishing how little the patients in the London hospitals heed the inevitable noise which is incessantly going on both within and without.

Unnecessary noise, or noise that creates an expectation in the mind, is that which hurts a patient. It is rarely the loudness of the noise, the effect upon the organ of the ear itself, which appears to affect the sick. How well a patient bears the putting up of a scaffolding close to the house, when he cannot bear the talking—still less the whispering—outside his door.

Never to allow a patient to be waked, intentionally or accidentally, is a *sine quâ non* of all good nursing. If he is roused out of his first sleep, he is almost certain to have no more sleep. It is a curious fact, that if a patient is waked after a few hours instead of a few minutes' sleep, he is much more likely to sleep again. Pain, like irritability of brain, perpetuates and intensifies itself. If you have gained a respite of either in sleep, you have gained more than the mere respite. Both the probability of recurrence, and of the same in intensity, will be diminished; and both will be increased by want of sleep. This is the reason why sleep is so all-important. This, too, is the reason why a patient waked in the early part of his sleep loses, not only his sleep, but his power to sleep. A healthy person who allows himself to sleep during the day will lose his sleep at night. But it is exactly the reverse with the sick; the more they sleep the better they are able to sleep.

It is important never to allow one's self to indulge in conversation in a sick-room in which a patient cannot, or is not meant to, participate. Although noise is to be avoided as much as possible, it must be remembered that a certain amount of work *must* be done, and that the performing of it will entail a certain amount of noise. A good nurse will thoroughly make up her mind as to what is necessary to be done, and then, being fully satisfied as to the necessity of action—be it the making up of the fire, the cleaning of the room, the administration of food or medicine, or what not—she will set about her work and perform it thoroughly, quickly, and with the least amount of noise that is consistent with thoroughness. An inexperienced nurse will take ten minutes to poke the fire, moving one coal at a time, and inserting the poker between the bars with absurd gentleness. In the end, the fire is not properly made up, the patient is bothered beyond expression by the persistent fidgeting, or perhaps wakes with a start as a big knob of coal falls with a crash into the fender. For merely replenishing the fire, knobs of coal may be placed upon it with the gloved hand; but it is better to make it up thoroughly, and run the risk of half a minute's noise, than to keep up an undercurrent of disturbance for a quarter of an hour.

GENERAL RULES.—It is important for a nurse to fully recognise the fact that she cannot always be with her patient. It is greatly to the advantage of the patient that the nurse should keep in good health, and it is incumbent upon her to arrange for proper rest, and for a due amount of exercise. In making these arrangements, however, she must be careful to place someone in charge during her absence, and to see that the person in charge is duly instructed as to the proper course to pursue. It is during the absence of the nurse that injudicious visits are often paid to patients, and that they become tired out by conversation. A good nurse will always foresee the possibility of these little *contretemps*, and will guard against them. Few nurses seem to realise what it is to be in charge. To be in charge is not only to carry out the proper measures yourself, but to see that everyone else does so too; to see that no one either wilfully or ignorantly thwarts or prevents such measures. It is neither to do everything yourself, nor to appoint a number of people to each duty, but to ensure that each does the duty to which he or she is appointed. This is the meaning which must be attached to the word by those in charge of patients, whether of numbers or of individuals. One sick person is often waited on by four with less precision, and is really less cared for, than ten who are waited on by one.

A nurse should never suggest any alteration of treatment without first consulting the medical man in charge. By so doing she may cause much disappointment to the patient, and may loosen that confidence which ought, in the patient's interest, to exist between her and the doctor. A doctor is always glad to receive any suggestion, or to hear any proposition made by a nurse.

The remark applies with double force to those well-meaning persons who flit about the world always offering advice to sick people. They have been benefited themselves by some patent medicine, mineral water, watering-place, milk cure, grape cure, movement cure, rubbing, galvanic baths, or the last new fashionable remedy, whatever it may be. Or because Dr. So-and-So has treated them successfully for the gout, they think he must be good for sprained ankles also, and they accordingly come with their recommendations, being well assured, and having no doubt in their own silly heads, that in medicine "What is sauce for the goose must be sauce for the gander also." Somehow or other, it seems a provision of the universal destinies that every man, woman, and child should consider him, her, or itself privileged especially to advise.

The kindest thing one can do to a chronic invalid is to try and interest his mind, and give him some sort of employment. Do not be too officious and too ready to do, or to help to do, all those little things which he can do for himself without injury. Try and lead his thoughts beyond himself, and beyond the dreary limits of his own sick-room. Talk to him, let him know all the humanising gossip of his own neighbourhood; who are engaged to be married; who has got a baby; and do not be afraid to tell him who, like himself, has fallen ill, for it will not do him any harm to think of others, and provided he can be led to forget his own sufferings, it is of comparatively little importance what is the subject upon which his thoughts dwell. A pet of some kind is an excellent source of amusement for a sick person. A baby or young child is an endless pleasure to an invalid woman, and in attending to the wants and listening to the prattle of her little companion she will forget her own troubles. A singing bird, which requires to be cleaned and attended to every day, is a capital distraction.

In case of acute illness friends and acquaintances should restrain themselves and abstain from sending grapes and flowers. When the unfortunate invalid is a popular man, the grapes come in by the hundredweight. They are of no use to him, and the servants require something more substantial. Even in hospitals flowers are a nuisance, and involve a good deal of trouble. If a nurse has been on her legs for twelve hours without a moment's rest, she is not particularly well pleased to receive a large hamper of flowers from some lady, whose only trouble in the matter is to order her gardener to send them.

The weary work of writing answers to anxious inquiries adds very much to the cares of the nurses and attendants on the sick.

PRACTICAL DETAILS OF NURSING.

We may now leave these preliminary matters, and proceed to discuss *seriatim* those more practical details, the arrangement of which naturally falls upon the nurse. First and foremost comes the question of the bed.

BEDS.—There is nothing of more importance to a sick man than the nature of the bed upon which he is expected to lie during sickness. We are all agreed that the beds of our ancestors were abominable, and it will be needless for us to waste time or space in decrying the four wooden posts and framework, the heavy hangings, and the bag of feathers which constituted the common bed of all English households before the dawn of the iron age. In these beds stuffiness, vermin, lumps and hollows, were the chief characteristics, and the smell of the hangings—hangings which were often heirlooms—reminded one, perhaps, of all the respectability belonging to antiquity, but it is hardly possible that the inseparable fustiness could be conducive to health or recovery from illness.

THE ALEXANDRA COT, VICTORIA HOSPITAL.

If the patient is likely to be long in bed, if it is evident that the first signs of a prolonged fever have appeared, if a fractured limb or other serious accident necessitates a long rest, absolutely on the back, the proper selection of a suitable bed is of the greatest importance.

A bed in which a patient is going to spend the whole of his time for some period must have no hangings, and it should have neither valance nor curtains, for they are merely a shield for cobwebs and dirt, which are less likely to be removed if they be hidden from view.

A bed should not be too wide, but, on the other hand, it should be of such a width that the patient, lying in the middle of it, can be easily reached by the nurse from either side.

The part of the bed which supports the mattress is usually made of iron rods interlaced, and for ordinary purposes there can be nothing better, as it is light, permits a current of air to the under surface of the bed, and is very readily cleaned. If the bed is to be as comfortable as possible, a flock mattress should be placed upon the bars, and upon the top of this another mattress of horsehair, which is a more resilient material, not so hot, and altogether a more pleasant material to lie upon than flock.

A feather bed is a most unwholesome and unsuitable bed for an invalid, and should never be employed except in cases where there is no choice. A very excellent mattress for sick persons is the Patent woven wire mattress (Fig. 1), which is a strong fabric of wire interwoven in all directions, with plenty of spring in it, and which gives to pressure in every direction. It is most comfortable and clean, and being made of tinned wire does not corrode.

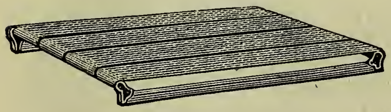


FIG. 1.—WIRE MATTRESS.

If these mattresses be used, it is usually sufficient to place only one other mattress upon them, or the patient may even lie upon three or four folds of a blanket placed upon the wire mattress.

The bed upon which a patient lies must always be absolutely flat and perfectly smooth. If his head or any part of his body is to be supported, this must be done by means of pillows placed to suit the requirements of the patient, but these accessory pillows must always be placed above the bottom sheet of the bed. If a blanket be placed between the mattress and the bottom sheet, it is necessary to take care that no wrinkles or inequalities are left in it.

The bottom sheet must always be protected as far as possible from everything that is likely to soil it, since it may be very undesirable to subject a weak patient to the fatigue, annoyance, and excitement of changing the sheets oftener than is absolutely necessary. This is done by means of "draw-sheets," which are placed under the middle of a patient, or under any part of his body from which any discharge is issuing or likely to issue. Draw-sheets are made of old sheeting doubled and sewn together. The size will depend upon the requirements of the case, but it is better not to have them too small. In some cases it is necessary to put a piece of mackintosh beneath the draw-sheet, but this should be avoided if possible, as it is apt to prove too hot for the patient. The ends of the draw-sheet should be tucked under the mattress on either side, and great care should be taken that it, as well as the sheet beneath it, is absolutely free from inequalities. The draw-sheet should be removed as often as it becomes soiled. The thankfulness of a patient suffering from acute illness, if only he be kept perfectly clean, cannot be over-estimated.

It is not always very easy to change a draw-sheet if it be under the patient's middle, and he is heavy and helpless. To effect this, two people are required, and often no small amount of strength is necessary. While one raises the patient's body, the other should take the clean draw-sheet, half rolled up, to the side of the patient's body opposite to that on which the first nurse is standing, and taking the free edge of the soiled draw-sheet and rolling it up, should *push* it away from under the patient's body at the same time that she slips the clean one into proper position. A patient can often render great assistance to his nurses, and every bed should be furnished with a rope hanging above it, with a transverse handle, which the patient may catch hold of, and so raise himself slightly off the bed as these necessary manipulations are accomplished. A good substitute for the rope and handle is a jack-towel fastened to the bed-rail at the foot of the bed.

The upper clothing of the bed should not be too heavy, but it is not necessary to give directions on a matter which may be left to the common-sense of the nurse. If the weather be cold, additional blankets beneath the counterpane should be added. It is a dirty plan to throw plaids, railway-rugs, and heavy coats, etc., which have probably never been washed, across the bed.

To change the bottom sheet for a helpless patient is an operation which demands some little skill from the nurse. The clean sheet should first be thoroughly aired and should then be rolled up without folding. The patient should then sit up in bed, or, if necessary, be propped up. The sheet to be removed should then be freed from the bolster and the head of the bed, and should be rolled up under the patient's back. This being done, the clean sheet should be partially unrolled and the free end made fast under the bolster, and should then be rolled downwards under the patient's back, until the rolls of the clean and dirty sheet lie parallel to each other under the patient's back. Now comes the tug of war, and the whole difficulty lies in passing the two sheets beneath the buttocks of the patient. Usually he is able to raise his body slightly by his own efforts with the help of the rope hung over the bed; and if the patient have ever so little power, it is astonishing what can be done by perseveringly inserting the hand beneath the back, and persistently rolling up one sheet and unrolling the other. If the patient is very helpless, it is necessary to have assistance; and if the patient be very heavy, one person to lift him and two others to manipulate the sheet will be found essential.

As changing the bed-clothes is often a great effort to the patient, every possible care must be taken to keep them clean, so that the necessity may not arise at too frequent intervals. Directly, however, the necessity does arise, there must be no hesitation, and a patient must on no account be permitted to remain on a sheet which is either damp or soiled. When a patient is fed, the bed-clothes must be carefully protected, and all crumbs must be diligently searched for and removed with scrupulous care.

In many cases of fever, and especially in typhoid fever, it is advisable to change the bed every day, and this can be done without any exertion on the part of the patient. The two beds must be brought alongside of each other, and the one into which the patient is going to be moved must be carefully made, aired, and the upper clothing turned back over the bottom rail. All the clothing, except the blanket, must then be removed from the patient's bed. The borders of the patient's bottom sheet should then be rolled inwards towards the patient, so as to afford a firm grasp to the two assistants who are to do the lifting. These two lifters must stand, the one on the edge of the patient's bed and the other on the bed into which he is to be moved. In this position they will be able to exert all their strength towards the desired object. A third person must take charge of the patient's head, and must stand behind the head-rails of the beds, the beds having been moved away from the wall prior to the process of shifting. If the patient have a broken leg or any local injury, a fourth person will be required, to take charge of the injured part. Thus it will be seen that three persons at least, and possibly four, are necessary for the safe shifting of a patient from one bed to another. All arrangements must be made before the operation is begun, and great care should be taken that each person fully understands his share of the work, and the patient must on no account be harassed by discussion and loud talking. All being in readiness, and the under sheet rolled up, the lifters having removed their shoes, mount on the bed, and then, at the word "now" from the person in charge of the head, all lift together, and the change is effected without difficulty. The patient is thus lifted in the sheet, and the sheet is easily removed from under him by the process of rolling described for the removal of bottom sheets and draw-sheets.

Bedsteads should be provided with foot-boards. They are always a great comfort, as without them patients are very apt to slip down in bed, and to get their legs over the end. It is convenient to have the foot-board movable, especially in cases of injury to the lower extremities.

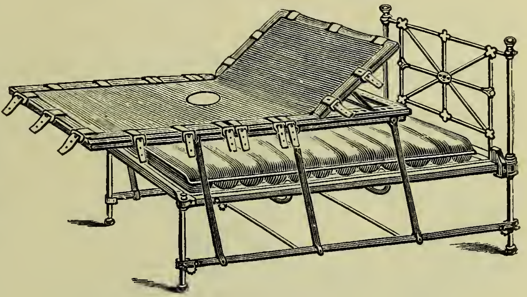


FIG. 2.—LIFT AND RACK BEDSTEAD.

INVALID BEDS.—The Patent Lift and Rack Bedstead (Fig. 2) is both simple and ingenious in construction, and is a great boon to patients who are helpless and paralysed. The advantage claimed for it is that "the patient may be easily raised, the bed made, the stool used, and the necessary ablutions performed, and again lowered on the bed, without the slightest fatigue.

A water-bed is an invaluable contrivance in cases where the patient is very weak and unable to bear the slightest pressure on the body. The old-fashioned water-bed was a tank upon wheels with a cover of mackintosh, upon which the patient lay. Its great merit was that of equalising pressure, so that the pressure being equally distributed over every part of the patient's body, it did not fall with undue severity upon any one part. The accompanying figure (Fig. 3) shows an ordinary full-sized water-mattress applied to an ordinary bedstead. This mattress, as well as all similar articles, can be inflated with air instead

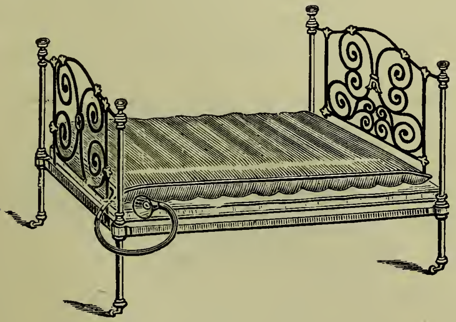


FIG. 3.—WATER OR AIR MATTRESS.

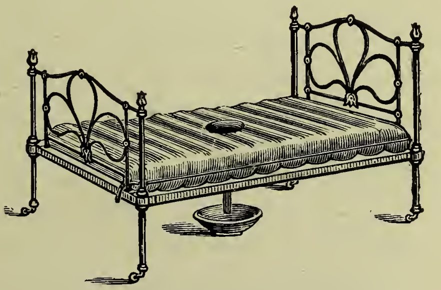


FIG. 4.—BEDSTEAD WITH MATTRESS AND CENTRAL TUBES.

of being filled with water, if it be thought desirable. For cases of utterly helpless bed-ridden invalids, a water-mattress has been devised with a central tube (Fig. 4), so that all moisture can be readily conveyed away. In those very distressing cases in which the patient is utterly inattentive to the calls of Nature, such a contrivance is a great boon.

INVALID CUSHIONS.—Happily, it is only rarely that a complete water-bed or a full-sized water-mattress is necessary. A water-cushion, for the support of the part affected, is usually all that is required. The advantage of a water-cushion over an ordinary one lies in the fact that it never gets into wrinkles, that the support which it affords is always equable and not lumpy, and that it is easily cleaned. A water-cushion can be filled either fully or partially, so as to be quite tense, or soft and flabby; they can be put into position too, and filled to the requisite amount afterwards; and, lastly, they can be filled either with hot or cold water, according to the requirements of the patient. Water-pillows are now happily among the common articles of domestic use, and they can be usually obtained in remote country districts without difficulty. The annexed figures (Figs. 5 and 6) show an ordinary air or water-cushion, and the method of filling it after it is *in situ*. It is advisable generally to add a little air to the water, so that after it has been partially filled, a little air should be blown in by the mouth.

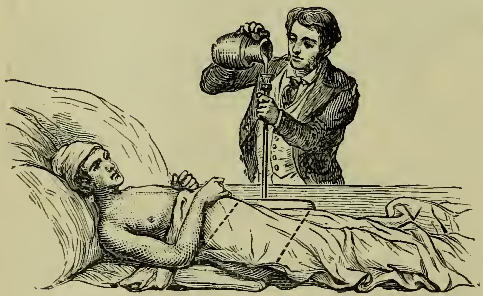


FIG. 5.—METHOD OF FILLING A WATER-PILLOW.

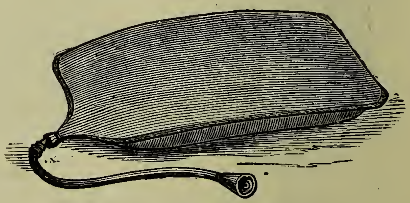


FIG. 6.—AIR PILLOW.

The temperature of these pillows can be regulated to a nicety, and by drawing off a little cold water and adding more hot, any degree of heat which may be thought desirable may be obtained. Before introducing a pillow under a patient it should be slightly distended with water.

The pillows, cushions, and mattresses which we have been describing are warranted to stand any temperature, from zero to 212° Fahrenheit, which latter is far above anything which could possibly be needed, or which, indeed, could be used with safety. Water-cushions must be treated with care, but if they be so treated they are very durable. The one thing which seems fatal to them is neglect, and if they be put away and are folded up, and allowed to get dry and hard, they will inevitably be spoilt. They must be very carefully protected from grease, since oil, in any form, dissolves the material of which they are made, and inevitably destroys the pillow. A water-cushion must never be placed near a part to which ointment is being applied, and if they be put under the head the patient should forego the luxury of pomatum, or hair-grease of any kind. For their proper protection they should be covered with flannel, and if they be placed under a patient's body, a blanket should be put over them so as to completely cover every part of the cushion. If this be not done, the patient is very apt, while having his meals, to bring his fingers in contact with the cushion, and if, as is generally the case, the fingers be soiled with a speck of butter or any other greasy material, the destruction of the pillow is the consequence.

BED-SORES inevitably result when a patient, weakened by disease, is compelled to lie for long together in one position. They are a disgrace to a nurse, and whenever a bed-sore occurs the nurse should question herself very closely as to whether or no it is in any way attributable to neglect or want of knowledge on her part. A bed-sore can usually be prevented by proper attention on the part of the nurse; and a nurse should always bear in mind that they are much easier to prevent than to cure, and that the occurrence of a bed-sore on her patient will not only lay her open to the suspicion of neglect, but will certainly increase her labours by an incalculable amount. It is right to add that bed-sores are not in every case preventable, and perhaps in some cases of fracture of the spine no amount of skill and attention on the part of the nurse will serve to avert so untoward an occurrence; but the experience of surgeons certainly is universally the same, that the number of bed-sores under the care of different nurses varies immensely.

A bed-sore is a sloughing or mortification of the skin, due to pressure. If a healthy man were fixed in one position in bed without the possibility of moving he would get bed-sores very quickly; but since in health we are almost constantly and unconsciously shifting our position, such an accident could never possibly occur. Now, it must be remembered that in sickness we get immobility from weakness, and the constant pressure, coupled with great feebleness of circulation, is not slow to bring about the mortification of the part pressed on. Even in disease, when the patient is reduced to a state of extreme prostration, he is happily strong enough to fret and to complain, and the most constant request, perhaps, which a sick man makes is to have his position altered, and if the nurse attends patiently to his requests she will be doing much towards the prevention of bed-sores. Again, the thinner a patient is, the more likely is he to have bed-sores over the projecting points of his bones from the squeezing of the skin between the hard pillow without and the harder bone within; which without the intervention of any soft padding of fat soon determines its sloughing and destruction. We may derive some profit from considering the condition of things which occurs in fracture of the spine, which, of all accidents and disasters to which our body is liable, is the one in which bed-sores are most likely to occur. A man who has his spinal column fractured, loses all power of motion and sensation in the parts below the injury. Having lost the power of motion he is unable to shift his position for himself; and having lost sensation he is unconscious of the pain which constant pressure produces; and, unlike the ordinary invalid, and being "dead from the waist down," he thinks not of his lower limbs, and does not ask to have his position in bed altered for him. It is the duty of the nurse in these distressing cases to think and feel constantly for her patient, and to remember to shift his position in bed constantly, whether he ask or no.

All bed-ridden patients who are compelled to use the bed-pan and the bed-bottle are put at a great disadvantage as regards cleanliness, and it must be constantly borne in mind by the nurse that nothing is so sure to cause a bed-sore as any inattention to the absolute cleanliness of her patient. A sick person must be kept as clean as a baby, and whenever the bowels are acted upon the parts must be thoroughly cleaned with a sponge dipped in warm soap and water, dried with a soft towel or an old silk handkerchief, and powdered. To think of a patient lying on a bed moist with irritating urine, or with his body fouled with its own discharges, is too horrible, and the good nurse will be constant and unremitting in her attention to these things.

A patient with fractured spine who has neither motion nor sensation in the lower half of his body is unconscious of the calls of Nature. His bowels act and his urine passes from him without any knowledge on his part, and consequently, in addition to the constant pressure to which his body is subjected, we have to contend with the evil of constant soaking in urine and liquid fæces. The skin of the patient's buttocks becomes sodden and macerated, the irritating fluid acting upon his tissues like a caustic.

The old-fashioned nurse—the strong muscular woman of the lower classes—was often a person who was not so black as she is sometimes painted. She not infrequently took a great pride in the cases under her care, and looked upon a bed-sore as something which affected her personal honour and reputation. She was often rough, no doubt, but then she was ready also, and being accustomed to hard and dirty work from her youth up, and being taken from the same class as the majority of the patients who came under her care, she was never squeamish at her duties, and consequently never hesitated for an instant in the thorough performance of those very unpleasant offices which it must of course fall to the lot of every nurse occasionally to perform.

For the prevention of bed-sores the first requisite is cleanliness, and whenever the necessity arises, the draw-sheet must be changed, and, if it be found necessary, the under-sheet and blanket also. Whenever the patient uses the bed-pan he must be thoroughly washed and dried as perfectly as possible by the nurse, since these are matters which a bed-ridden patient can seldom manage for himself.

If the case be one in which there is much dribbling of urine, it may be necessary to supply the patient with an india-rubber urinal, which he must wear constantly. A urinal is simply an india-rubber bag which fastens round the waist, and receives the urine directly it is passed. They are made for either sex. A urinal must be kept scrupulously clean, and must be thoroughly washed out at least once a day with boiling water, or it will soon become unbearably offensive. It it is found that ordinary washing is not sufficient to keep the apparatus sweet, a rinsing with a saturated solution of boracic acid will be found efficient. If a urinal cannot be obtained, some good may be effected by placing a large sponge between the patient's legs, which will soak up a good deal of the moisture. If a sponge cannot be got, a big handful of tow or cotton waste, or even an old towel, will be better than nothing. If a sponge is used, it must be frequently washed and wrung out of boiling water; and if a lump of tow be employed it must be destroyed as often as it is changed.

Some of the water-beds are made with a centre tube, as in the illustration (Fig. 7), in order that the discharges and moisture may drain away; or, failing this, an ordinary mattress may very easily have a hole made in its centre through which a tube connected with a water-proof sheet may pass.

None of these appliances for the artificial drainage of a patient are altogether trustworthy, and even the best of them cannot replace that unremitting attention which in these cases is so absolute necessary. Cleanliness being, as far as possible, insured, the next thing is to relieve all points upon which the body rests from pressure. Bed-sores are most common upon the most prominent points, and such as the bottom of the spine or sacrum, and upon this spot it is that bed-sores generally make their appearance. Bed-sores also occur upon the hip-bones and on the heels, and occasionally abscesses will form on the back of the shoulder-blades from the pressure at this spot.

It is advised by many to rub the skin over these prominent parts with spirit, and it is the custom of many nurses to apply either spirits of wine or brandy. The effect of this is, it is said, to harden the skin. Possibly it may do so—it may, at least, be regarded as a cleansing process. Painting the part with collodin is sometimes resorted to, and there can be no doubt that the fine film thus left upon the skin serves as a protective.

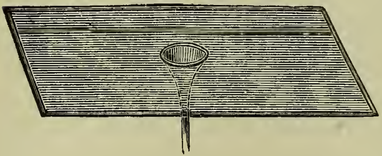


FIG. 7.

The patient's position must be constantly shifted, and when he is perfectly helpless, as in cases of fracture of the spine, a good nurse will turn a patient in bed at regular intervals by the clock. If a patient lie for three hours on one hip, and then three hours on the other, changing every three hours during the day and night, the result will be far different from that which would have resulted had he spent twelve hours at a stretch on either hip. This constant and painstaking alternation of the pressure has saved many a life.

In those cases in which it is possible, a patient may be turned completely on the face; and when this can be done, there should be no possibility of the occurrence of a bed-sore.

A nurse should be well acquainted with the earliest indications of the occurrence of a bed-sore. The skin over the part (and this is usually over the prominence of a bone) begins to look pale, mottled, and sodden. This is quickly followed by the mortification of the patch of skin. Seeing this condition of things, it is necessary to take prompt

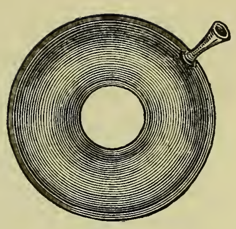


FIG. 8.

steps for the protection of the dangerous patch. The pressure may be taken off in the same way as the pressure is taken off a corn, by the ordinary thick corn plaster, made of a circle of felt. Several thicknesses of lint, or some lint having flannel between its folds, or a pad of lint lined with cotton wool, may be taken, and from its centre should be removed a portion slightly larger than the piece of skin which it is sought to protect. Upon this protective pad, which will have to be retained in its place by a few turns of a bandage, the patient must lie, and in this way the doubtful patch of skin may eventually be enabled to recover its vitality.

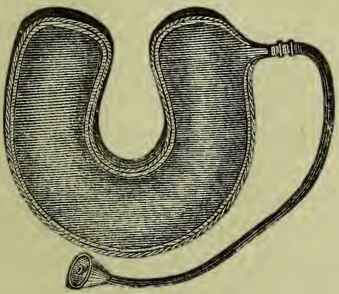


FIG. 9.

India-rubber cushions are now made in various shapes, which serve admirably to take off the pressure from any part of the body. Thus they may be obtained circular, which is the most generally useful shape, and serves to protect almost any part of the body (Fig. 8). The Horse-shoe Cushion (Fig. 9) is especially useful for the protection of the sacrum or lower part of the spinal column, which is the region of all others the most liable to suffer from bed-sore. The Spinal Water or Air Cushion (Fig. 10) is of great service in those cases where, owing to an extreme degree of emaciation, the patient is unable to stand the least pressure upon the prominences of the upper parts of the spinal column. It consists really of two cushions joined down the centre, so that the body lies upon a double air-pad, while a gutter or channel is left between them to receive the prominent spinal column. These cushions are very much to be preferred to any kind of pad made with lint or other material of a similar kind, and for this reason, that they do not absorb discharges or other fluids, and can be very readily and completely cleaned. They also have this advantage, that they can be filled with either hot or cold water, according to the requirements of the case. A mixture of air and water is, however, on the whole, the best "stuffing" which can be employed.

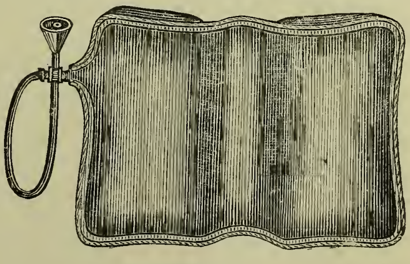


FIG. 10.

When once the sore is formed it requires other treatment besides the mere relief from pressure. While the wound is very small, painting the skin with collodion is sometimes of service; but such treatment is of no use when it has attained any size.

A sore having once formed, the separation of the slough is to be encouraged in every way.

The chief point in the treatment of a bed-sore is to keep the part sweet and free from decomposition, for if that be not done the patient is in great danger of being killed by blood-poisoning. Too often when sores become offensive, it is customary to apply remedies rather to the air of the room than to the patient, and it is not uncommon to find a sick-room reeking with carbolic acid, chloride of lime, pastilles, incense, and eau de Cologne. When we encounter these attempts to smother unwholesome smells by others more powerful, we suspect that the nursing is at fault, for if this were not so the occasion for the use of these masking odours would not arise. For keeping of a wound or sore sweet, the point which demands primary and minute attention is cleanliness. It must be washed and cleaned daily with the most scrupulous care, and, if necessary, twice or thrice in the day. The helpless patient must never be allowed to lie in the discharges which flow from his wound, and the nurse should never shrink from the trouble of changing the linen as often as it becomes fouled. Cleanliness and care are the first and best of disinfectants, and other disinfectants which may be used are only to be regarded as auxiliary to these.

Disinfectants applied to the wound itself should not be of an irritating character, or they may increase the size of the wound which it is sought to heal, and do harm instead of good. A good disinfectant is boracic acid—the acid which is extracted from borax. Lint impregnated with this acid, and known as "boracic acid lint," is sold by druggists, and if a piece be cut the size of the sore and kept constantly applied (having been previously moistened with water), it will be found very effectual in preventing decomposition and keeping the part wholesome.

Oakum, the ordinary teased yarn impregnated with pitch, is a very agreeable application to bed-sores, as it combines antiseptic properties with some power of absorption and no little springiness, so that when made into a pad the patient may lie upon it without danger of undue pressure.

All greasy applications are favourable for bed-sores; and they are preferable to moist ones, which encourage decomposition. If nothing else is at hand, the part may be kept covered with a piece of lint or soft linen rag, upon which common lard or cold cream may be smeared. An antiseptic ointment, prepared with some common unirritating antiseptic, as boracic acid or carbolic acid, will be found a most excellent application. The great merit of greasy applications is that they do not absorb moisture. They must, however, be frequently changed, and whenever they are changed the part must be most thoroughly cleansed.

Whatever is used to clean a bed-sore, or indeed any sore, should be burnt when done with, so that old rag or a bit of tow is the best material for the purpose. Sponges ought never to be employed, because the pores of the sponge become soaked with the discharge of the wound, which readily putrefies.

The wound should be washed with warm water, to which a little permanganate of potash has been added. The fluid should be projected with some force on the surface of the wound from a glass syringe, and in this way the discharges from the surface will be dislodged. While washing a wound, it is needless to say that great care must be taken to ensure that the liquid does not run into the bed. This may usually be prevented without much difficulty by pressing the edge of an ordinary tin bowl against the skin, and placing the patient in such a position that the water drains into it.

If sticking plaster is employed to retain in position any of the dressings or applications, it is essential to cleanse the edges of the sore of all pieces of plaster which adhere to it. This cannot be done by means of water, or even soap and water, for the plaster is not soluble in such fluids. The best solvent is turpentine or olive oil; but when using the former, care must be taken not to touch the surface of the wound with it, and to wash the surrounding skin very carefully with warm soap and water, so as to remove all traces of the turpentine, which, if left adhering, might prove irritating or too stimulating. When the slough has separated from the surface of a bed-sore it must be treated just like any other sore place or granulating wound. It must be kept clean, and should be dressed two or three times a day with some slightly stimulating application, as zinc lotion, zinc ointment, or even common resin ointment, than which nothing is better. The dressing must always be cut the exact size of the sore, and if the sore is healing satisfactorily it will require to be made smaller and smaller each day.

There are many other methods of treatment which may be resorted to in special cases, and with these the nurse should be practically familiar. A good plan is to clean the part with a little soap and water, and then after thoroughly drying, dab it over lightly with eau de Cologne or camphorated spirit, finally dusting it with Fuller's earth, dermatol, or prepared calamine. If the skin gets too dry a little lanoline may be rubbed in instead of using the powder. When the part is red and inflamed the most satisfactory application is an ointment made by rubbing up thirty grains of finely powdered camphor with an ounce of zinc ointment. When sloughing has already taken place the dead tissue may be separated by linseed-meal poultices, care being taken that although they are renewed frequently, they are not applied too hot. When the slough comes away spirit lotion is the best dressing. An obstinate bed-sore may often be induced to heal by the following ingenious process. Take an exact pattern of the sore and have a thin silver plate made so that it covers the whole of the ulcer, but does not project over the healthy skin. To the silver plate attach a wire some six or eight inches long which in its turn is soldered on to a plate of zinc. The zinc plate is placed on some adjacent part of the body, but separated from the skin by a piece of wash-leather soaked in vinegar. A galvanic action is set up and the healing process is carried on with much rapidity.

BED-PANS should be of white earthenware—white, because the fact of cleanliness or otherwise is most easily noticed on a white ground, and earthenware, because it is a material which cannot be corroded by any acrid fluids, and can be kept in a state of absolute and perfect sweetness.

The best bed-pan for ordinary use is the common, well-known round pan with the in-curved rounded border and the hollow handle, through which all fluids can be poured off (Fig. 11). It is necessary to pad the border of the pan, or cover it with flannel, from the coldness and the hardness of the earthenware. Two such covers should be made for the pan, in order that one of them may be always clean. It is sometimes necessary and advisable to grease the edge of the pan before it is placed under a patient, so that it may slip into position with greater ease, and without risk of bruising the skin.

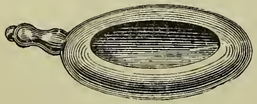


FIG. 11.

After the bed-pan has been used the nurse should make certain that the bed has not been fouled, and that the patient is thoroughly and properly cleaned.

In some cases it may be desirable that the stools should be kept for the inspection of the medical attendant. When this is the case, it is seldom allowable to place any disinfectant in the pan—at least, this should not be done without first consulting the doctor. Every bed-pan should be provided with a cover, and a stopper for the handle. The cover should be of earthenware or metal, so that it may be thoroughly and properly washed. The wooden covers, with which some of the old-fashioned "night-commodes" are provided, are not to be tolerated. When the stools which have to be kept for inspection are liquid, they must not in any way be meddled with; but when the stools are solid any liquid (urine) which may be passed with them should at once be poured off, the solid portion being alone retained. If this be done, it will be found that the stool is far less offensive than otherwise is the case. A stool which has to be kept should be immediately removed from the sick-room to an adjoining closet, or even outside the house, where it should be covered up and corked to await inspection. If the case is one in which the inspection of the stools is not an important matter, it is a great comfort to the patient and to those about him if some deodorising disinfectant be first placed in the pan. The most suitable for such a purpose are "chloralum" or Burnett's Fluid (solution of chloride of zinc), which being themselves inexpensive and odourless, are nevertheless powerful deodorisers. If these are not at hand, carbolic acid should be used.

Some people prefer the "slipper bed-pan," of which we here give an illustration (Fig. 12). It certainly has this advantage, that it is easily slipped under a patient, either from the front, or behind, or laterally; but for ordinary purposes it will not be found so generally useful as the circular varieties.

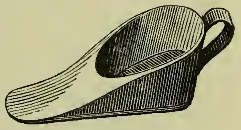


FIG. 12.

URINE BOTTLES are also a great comfort to invalids, and they are only of second importance to bed-pans. They are wide-mouthed, big earthenware bottles, with one flattened side, upon which they rest without fear of being overturned. The patient can use them almost without disarranging the bed-clothes, and, with a little care, absolutely without risk of wetting them. It is important to bear in mind that these bottles should be emptied and washed directly they have been used. It is undesirable to allow a utensil filled with urine to remain either under or by the side of a patient's bed. This fault is often committed, and it is always a sign of negligence on the part of the nurse.

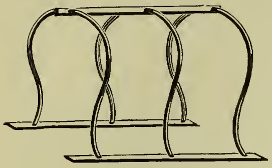


FIG. 13.

BED-FRAMES.—It is often necessary to keep the upper bed-clothes well off the patient. In cases of broken legs, or in any other condition where the legs are immovable, it is always advisable to prevent the sheets from resting on the tips of the toes. In cases of severe inflammation of the bowels, and in all cases of wound or operation in the region of the abdomen or groin, it is likewise necessary to relieve the part from the weight of the clothing. This is managed without difficulty by means of the ordinary bed-frame (Fig. 13), which is a very simple contrivance, and one which, in cases of necessity, can be very readily extemporised by any carpenter of ordinary intelligence.

It is sometimes not advisable to place a bed-frame in the bed with the patient. When this is the case, a patent bed-frame can be obtained, which supports the clothing from the outside by means of slings and clips.

Whenever a bed-frame or any similar contrivance is employed, great care should be exercised that the patient's body does not get chilled by draught. He should be closely covered with a blanket down to the point where the cradle commences.

Sometimes it is advisable not only to protect a limb from the superincumbent clothing, but also to protect it from the pressure of the clothing beneath. This is necessary in many cases of fractured limbs, and it is necessary also in those cases in which bed-sores form on the prominence of the heels. A leg may be swung by means of an ordinary cradle and a few turns of a wide, smooth bandage; but, if it be obtainable, the best piece of apparatus for such a purpose is that known as Salter's Swing (Fig. 14), which permits of movement in four directions.

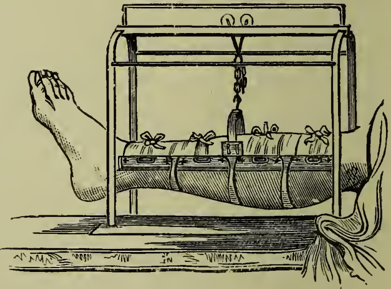


FIG. 14.

BED-CURTAINS are scarcely ever admissible in the sick-room; but during the summer something like the gauze mosquito curtains, which are familiar to all travellers in the south of Europe, will serve to protect the invalid from the attacks of flies and midges, which are often very harassing to a sick person, and effectually prevent sleep. A piece of gauze netting thrown over the head is often a sufficient protection.

BED-RESTS.—The ordinary bed-rests or back-rests, such as are shown in Figs. 15, 16, are a great convenience and comfort to invalids, as by their help they can be sustained at any angle in bed without feeling any fatigue whatever.

It is a great relief to a patient to be able to change his position in bed, and especially to alter the angle of his body. This is effected by means of pillows; and pillows of all sizes and shapes, and of various degrees of hardness, will be found invaluable. Whatever kinds of pillow are used, they should all be covered with white pillow-cases, which easily show dirt and stains, and can be washed without any extraordinary trouble or expense. It is not uncommon to see a patient sitting up in bed with his body supported by any odd pillows which can be pressed into the service from couches, chairs, ottomans, and the like, and covered in various coloured chintzes, worsted work, or other similar materials. These pillows are scarcely ever washed, and should not be employed for the purpose of supporting an invalid in bed unless they have been properly cleaned and provided with suitable white covers.

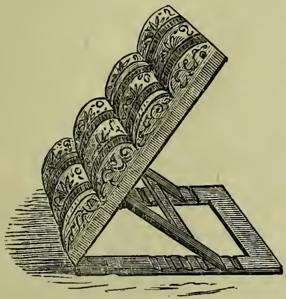


FIG. 15.

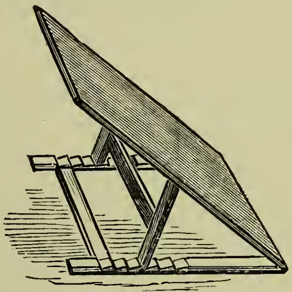


FIG. 16.

A very fair bed-rest may be extemporised by means of an ordinary light bed-room chair, which must be so placed that the back and rails shall be under the patient's back, while the front legs project over the end of the bed.

Among these may be mentioned the so-called "literary machine"

(Fig. 17), which is a small reading-desk arranged so that it can be placed at any angle and in any position.

These appliances need no detailed description. The annexed figures will at once show their mode of use, and the purposes they are intended to fulfil.

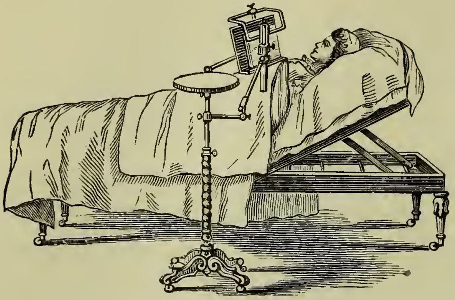


FIG. 17.

BED-TABLES, upon which patients' dinners may be placed, or which they may use either for reading or writing, are to be had in great variety. Of these we give a couple of wood-cuts (Figs. 18, 19). One is designed to stand upon the bed, the legs being placed on either side of the patient's knees. The other form of bed-table is so constructed that it projects across a bed without touching it, which is a great convenience in those cases in which it is impossible to place furniture upon the bed. It is often a great blessing to be able to get these articles ready made and at a moment's notice, but they are so simple in construction that any village carpenter would find but little difficulty in manufacturing something which at least would answer the purpose.

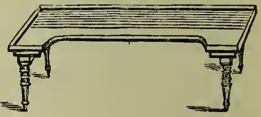


FIG. 18.

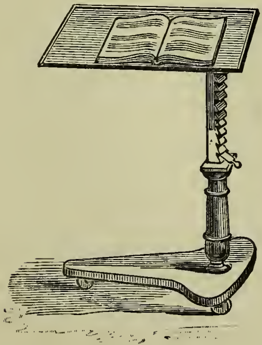


FIG. 19.

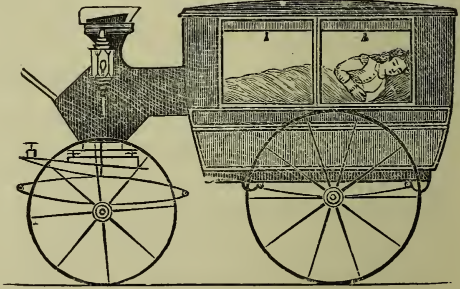


FIG. 20.

INVALID CARRIAGES.—The transportation of a patient from place to place is generally a formidable proceeding, but one which it is often essential to undertake. If a patient is too weak to sit up, he must be moved bodily in his bed. Invalid carriages are now made, in external appearance like an omnibus (Fig. 20), and they take a person lying at full length without difficulty. They may be placed upon a railway truck, so that an invalid may be carried almost any distance without fatigue. Railway companies keep saloon carriages on purpose for invalids, provided with beds and every convenience for a long journey.

There is nothing better for moving an invalid than a hammock (Fig. 21). If a real hammock is not to be obtained, there is generally but little trouble in getting one made. There is no jarring in a hammock, and it can be fastened up in an ordinary omnibus or saloon railway carriage without any difficulty.

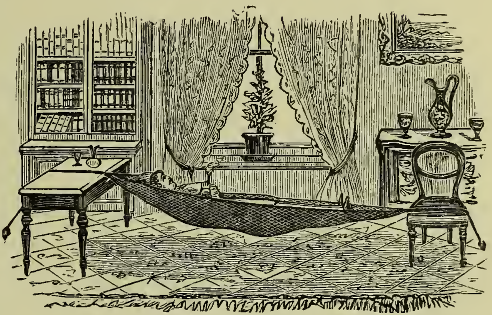


FIG. 21.

If a patient is able to sit up, he may make use of the carrying chair, shown in Fig. 22. These chairs are light and strong, and are so ingeniously constructed that they pack into a very small space, and consequently do not form an inconvenient addition to one's luggage. The handles are so placed that they are at a convenient height for going up and coming down-stairs without tilting the patient at an angle which would cause him either danger or alarm.

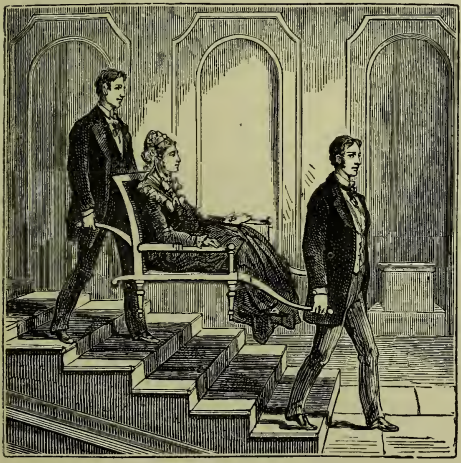


FIG. 22.

Two persons may carry an invalid in their arms with very little difficulty. They should interlace their hands by clasping each other's wrists, and this will form an excellent seat upon which the patient may sit, and support himself by placing his own hands round the necks or on the shoulders of his carriers. Or the carriers may use two hands to afford a seat and the other two to support the back of the patient.

With regard to Bath chairs it is needless to speak, as they are almost to be reckoned as pieces of domestic furniture. They are of every possible form, and suited for every conceivable contingency. They are, however, very expensive, and for persons of slender means the twenty or thirty pounds which is often asked for a Bath chair is a serious matter. We show in Fig. 23 a basket-work chair made like an ordinary perambulator, which is scarcely a quarter the price of the more elaborately-finished and elegant chairs, but answers nearly every purpose quite as well.

Chairs in which a patient can propel himself are a great luxury, and the pleasure which the convalescent feels in wheeling himself about a house or garden after a prolonged confinement in bed is naturally very great. These self-propelling chairs are of two kinds. The Merlin chair (Fig. 24) has two driving wheels and a guiding wheel, and each driving wheel has a propelling rail fixed to it upon which the patient can exert the necessary force. The other form of chair differs from the Merlin chair in this, that it is worked by a couple of rotating levers attached to the arms which are connected with endless screws, by means of which the propelling wheels are set in motion (Fig. 25).

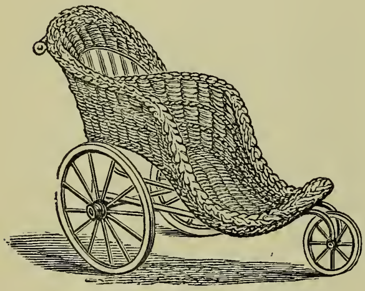


FIG. 23.

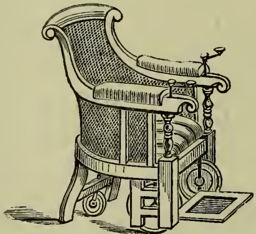


FIG. 24.

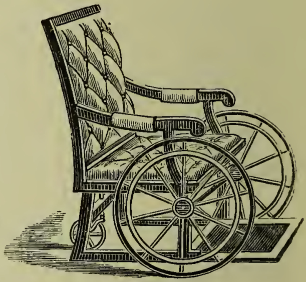


FIG. 25.

MOVING THE PATIENT.—Although we have had much to say about the bed into which a patient is to be put, and the care to be taken of him when he is there, we have as yet been silent on the important point of putting him into bed in the first instance, which, in the case of broken limbs, is a very serious and difficult matter.

In the case of a broken leg or thigh, the less that is done to a patient previous to the arrival on the scene of some skilled person the better. Any rough or ignorant handling may have the result of causing the end of the broken bone to come through the skin, and thus converting a simple fracture into a compound fracture; and it must be borne in mind that the difference between a simple and compound fracture is often the difference between life and death.

If a considerable time is likely to elapse between the receipt of the injury and the arrival of the doctor something must be done. If a patient has to be moved, this must be done on something flat, such as a hurdle, a door, or a stretcher of any kind. This should be placed on the ground alongside the injured person, and then while some with the patient's assistance move his body on to the stretcher, others will carefully perform the same office for the injured leg, great care being taken that the limb is kept perfectly horizontal and in a straight line.

To undress a patient requires a good deal of tact and experience. The first and most difficult matter is to remove the boot. A laced boot must have the laces completely taken out, so that it may slip off the foot as easily as possible; and a boot with elastic sides should have the elastic cut close to the seam on one or both sides. A Wellington boot or a hunting boot will often need to be cut completely open. The boot being loosened to its greatest extent, one person should steady the leg at the ankle, while another gently "humours" the boot off the foot. Even with the tightest boot a little patience will generally suffice to get it off. There must be no wrenching, tugging, or jerking, or the gravest results may follow. The stocking should always be cut open down the seam, and the foot very gently drawn out. The trouser of the injured leg must be cut open completely down the outer seam, from the band to the bottom of the leg. There must be no hurry in carrying out these directions, and it must be remembered that nothing but harm can result from a needless destruction of clothing. Having removed the boot and the stocking, and one leg of the trousers being cut up, no obstacle remains to completely laying bare the leg. If the injured part is swollen, hot, or painful, it is often agreeable to the patient to have some cold water rags applied to it, and there is never any harm in doing this. The leg may, if necessary, be steadied by having some sand-bags placed on either side of it. Sand-bags are long bags like small bolsters, made of canvas or bed-ticking, and about four or five inches in diameter and half a yard in length. These, when filled—not too tightly—with sand which has been previously washed and baked in an oven, form very valuable supports in cases of fracture of the extremities.

An injured man must be kept warm. This is very important, and although it is easily effected, it is too often forgotten. An injured person suffers from a condition which is known as "shock." The circulation is depressed, and a feeling of chilliness, often accompanied by shivering, is apt to supervene. It is necessary, except in the hottest weather, to cover a patient with blankets, and the administration of a little warm brandy and water is advisable. It is a mistake to cram an injured patient with brandy or other spirit, as is too often done. It may enable him to forget his pain and to put a "bold face" upon his misfortunes for a time, but the period of depression will assuredly follow, and it must be remembered that this depression will bear an exact proportion to the previous exaltation, and that an injury is a condition which demands strength not only during the first moments of its infliction, but during the tedious weeks which are necessary for its repair. Bottles of warm water are always grateful and pleasant, and are more serviceable in warding off the effects of shock than the injudicious administration of alcoholic stimulants.

The friends of a man who meets with a serious accident are very prone to be seized with an itching to do something. Formerly a man who fell out hunting, or broke his leg, or bruised his head, ran a serious risk of being bled by the first good Samaritan that came by. Now the risk is of a too brisk administration of spirits. The right thing to do is to guard him from harm, including ignorant interference, and to keep him warm.

GIVING THE MEDICINE.—The administration of the various medicines according to the direction of the doctor is one of the duties which falls naturally to the nurse. The patient, unless convalescent, is rarely in a condition either mentally or physically to see to this important duty himself. The frequency with which medicines have to be given varies with the nature of the case and the mode of treatment adopted. Some doctors, as a rule, order medicines to be taken only twice or three times a day, whilst others who have a greater belief in drugs prefer hourly doses, and may even consider a dose every ten minutes necessary to reduce the temperature, or to moisten the skin, or produce some other effect.

When a patient is weak and ill he hates being bothered about medicines, and a good nurse relieves him of all feeling of responsibility and trouble in the matter. When the time for giving the dose comes round she will be ready with it, and the single expression of "Here is your medicine" is all that need pass. The foolish fussy nurse who says, "It will soon be time to take another dose," "Are you ready for your medicine yet?" and so forth, simply annoys the patient with an unpleasant prospect, and does no good.

The glass in which the medicine is given should always be perfectly clean, and great care ought to be taken to wash it thoroughly every time it is used. This is particularly important when the medicine is an oil, like cod liver oil. What more disagreeable can be conceived than a glass with the remains of former oily doses adhering to its sides? The good nurse is never guilty of negligence of this kind, but always gives medicine so that it causes the least amount of annoyance to the patient.

As a rule, a patient should never be roused from sleep to take either food or medicine, and there is more often a necessity to awake him to take the former than the latter. The nurse, however, should always inquire about these points, and should ask, "Is the medicine to be given at night, as well as during the day?" "Is he to be awakened to take his medicine?" "How long may he be allowed to sleep without taking medicine?"—and so forth.

Some medicines are ordered to be taken at particular times, as "at bedtime," "before meals," "after meals," etc., and these directions require attention. "Bedtime" with a patient who keeps his bed must be taken to mean "the ordinary bedtime," *i.e.* ten or eleven o'clock, as the case may be. Tonic medicines and such as are intended to improve the appetite are ordered "before meals," and when no directions more explicit are given, about twenty minutes before the meal may be looked upon as the proper time. If these medicines are given too long a time before meals, their appetising effect passes off; if too short a time elapse between the tonic and the food, the bitter or other taste left upon the tongue is apt to interfere with the proper enjoyment of the meal.

It is advisable to shake every bottle of medicine before it is given, but there are some cases—when the medicine consists of a powder "suspended" in a thick fluid—in which it is absolutely indispensable so to do.

DOSES.—The doses of medicine vary, and they are ordered in very varying quantities, such as drops, tea-spoonfuls, dessert-spoonfuls, table-spoonfuls, and divisional parts ($\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{4}$, etc.) of the bottle in which they are contained.

The imperial pint, which is the standard fluid measure in this country, is divided into twenty fluid ounces; each fluid ounce contains eight fluid drachms, and each fluid drachm is composed of sixty minims, or drops. Now, roughly speaking, but by no means accurately so, a "drop" means a *minim,* a "tea-spoonful" means a *drachm,* a "dessert-spoonful" means two *drachms,* and an *ounce,* which is perhaps the most common of all doses, is equivalent to "two table-spoonfuls."

This method of measuring medicines by drops and spoonfuls is convenient, no doubt; and although it is accurate enough for medicines which are tolerably innocuous, it must be remembered that it is very far from absolute accuracy. Whenever accuracy is necessary, it is imperative—and, in fact, in all cases it is advisable—to use a measuring medicine glass for the administration of doses of medicine. Medicines which are ordered in drops should in all cases be accurately measured in a minim measure (Fig. 26). Drops which are let fall in a haphazard way from the lip of a bottle are of very variable size, and their size depends upon the nature of the liquid and the shape of the bottle-lip.

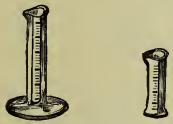


FIG. 26.

Drops of thin liquids, such as tinctures and other spirituous or ethereal preparations, are very much smaller than drops of thick liquids like treacle, which, being more tenacious, hold together more forcibly.

Spoonfuls vary in size as much or more than drops, a fact which must be evident to anyone who has studied the fashion in these matters, and has noticed how much these domestic articles vary in shape and capacity. A table-spoonful is ordinarily supposed to be equal to four drachms, or half an ounce, but in reality the capacity of a table-spoon averages between five and six drachms. In calculating doses for hospital out-patients it is convenient, in order that the patients may not run short of medicine between the days of visiting the hospital, to reckon the table-spoonful as five drachms instead of four. The ordinary medicine glasses are plainly marked in ounces and spoonfuls (Fig. 27), so that by using these all chance of a mistake is avoided.

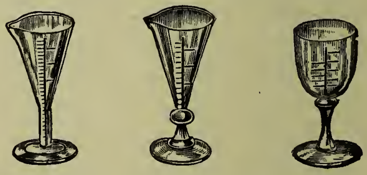
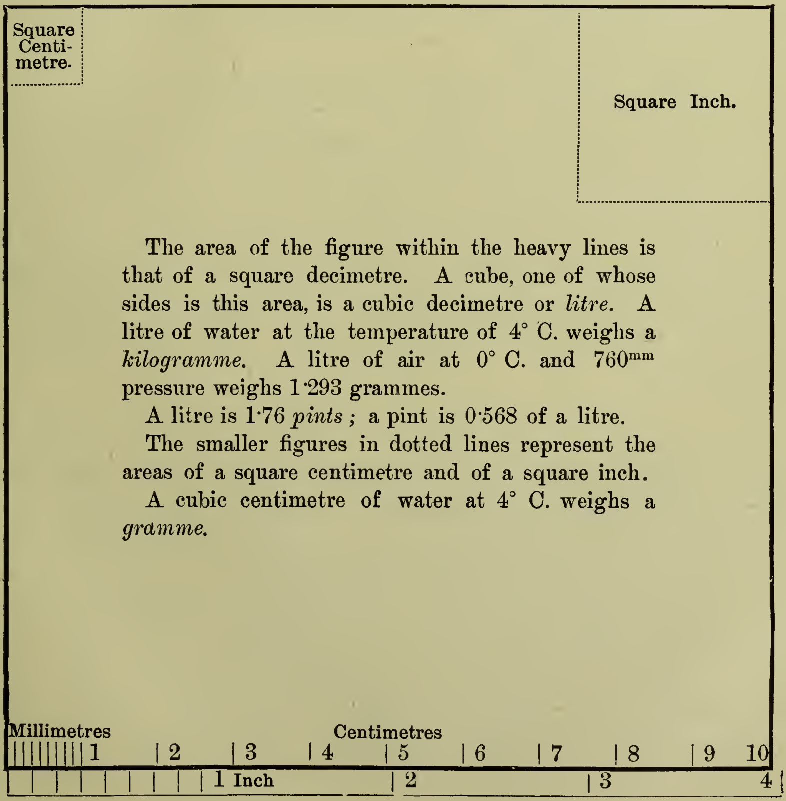


FIG. 27.

THE METRICAL SYSTEM.—It is to be hoped that before long the metrical system of weights and measures will be employed in this country, if not for commercial purposes, at least for measuring medicines. One great advantage would accrue from this, that our weights and measures would be in accord with those which are in invariable use upon the Continent.

The foundation of all metrical measurements is the *metre,* which is the length of one ten-millionth part of the distance from the equator to the pole, and which amounts to a little more than our yard, or, to be accurate, 39·37 inches. Now, the metre being taken as a standard, can either be multiplied or divided, the words denoting multiples of the metre being derived from the Greek, and those denoting divisions from the Latin. Thus

10 metres make a *Deca* metre.
100 ,, ,, *Hecto* ,,
1,000 ,, ,, *Kilo* ,,
10th of a metre makes a *Deci* metre.
100th ,, ,, *Centi* ,,
1,000th ,, ,, *Milli* ,,



The area of the figure within the heavy lines is that of a square decimetre. A cube, one of whose sides is this area, is a cubic decimetre or *litre.* A litre of water at the temperature of 4° C. weighs a *kilogramme.* A litre of air at 0° C. and 760^{mm} pressure weighs 1·293 grammes.

A litre is 1·76 *pints ;* a pint is 0·568 of a litre.

The smaller figures in dotted lines represent the areas of a square centimetre and of a square inch.

A cubic centimetre of water at 4° C. weighs a *gramme.*

Nothing can possibly be simpler than this, and by simply squaring these linear measurements we get means of measuring surface, and by cubing them we can estimate capacity.

The standard of weight is the weight of a cubic centimetre of water at its greatest density. This is called the *gramme,* and is equivalent to 15·432 English grains. By multiplying or dividing the gramme we are provided with decagrammes, hectogrammes, and kilogrammes, decigrammes, centigrammes, and milligrammes. Can anything be simpler than this, or in greater contrast to our troy, avoirdupois, and apothecaries' weights, our Winchester bushel, rods, poles, and perches, and such-like antiquated complications?

English medicine bottles are made of certain sizes, and are known as "six ounce," "four ounce," or "ounce" bottles, as the case may be. The practised eye will soon detect the size of a bottle at the most cursory glance. When a bottle is furnished with division marks, each mark, as a rule, indicates an ounce. When the division marks are printed on a paper slip, it is useful to know this, in case the paper label should be rubbed off.

After giving a dose of medicine, it is customary to give something to "take away the taste." A lump of sugar, a spoonful of preserve, a bit of lemon to suck, or a piece of cheese, are all useful for such a purpose, and the inclination of the patient may be taken as a guide in the selection of one of them.

It is very common to give medicines which contain strong acids or iron through a glass tube, because of the fear which patients have of corroding or blackening their teeth. It is well to wash the mouth after taking any of these medicines, either with pure water or with milk and water.

PILLS.—Many people say, "I cannot swallow a pill." This is simply ridiculous, and the failure is entirely due to their setting the wrong way to work. It is evident that the people who make this assertion swallow lumps of meat or food which are ten or twenty times as big as pills, and if they would try and swallow a pill exactly as they swallow their food there would be no difficulty. To see a person "chuck" a pill to the back of the throat, and then throw the head violently back, and begin to "guggle"—an action which effectually closes the throat—is simply laughable. They would get on much better if they held the head down, or at least horizontal, in the position it assumes at the dinner table. Then let them place the pill just within the lips, and take a drink of water, and the result will be that the pill must be swallowed, whether they wish it or not.

A pill as a rule should be coated or varnished, and modern chemists invariably send them out in small bottles, rather than in the old-fashioned pill-box. Pills which are varnished do not stick together, and there is no necessity for the nauseous powder in which, years ago, they were constantly enveloped.

Pills need not be large. The dose of medicine ordered is often only a fraction of a grain, and there is no advantage in converting it into a five grain pill. A chemist who knows his work sends the patient a pilule instead of a pill. Of late there has been a revival of the old custom of coating "dinner pills" with gold-leaf.

Pills should be freshly prepared, for if they are old they will not dissolve. Pills containing mineral purgatives, such as mercury or calomel, should always be followed in a few hours by a purgative draught, in order to insure that the mineral matter does not produce any constitutional effects.

Pills are sometimes given at bed-time, but more frequently they are administered at regular recurring intervals throughout the day, like fluid medicines. If a mild purgative for daily use is required, it is a good plan to give a pill at dinner time. In this way any violent action of the contents of the pill on the coats of the stomach or intestines is avoided, because the purgative matter is either dissolved or finely divided by the food. The pill being thoroughly dissolved in the food insures that the whole of the food is properly evacuated from the bowels.

POWDERS are very often given instead of pills, and for a variety of reasons: thus, the patient's stomach may be in too delicate a state to tolerate the presence of so irritating a body as a pill or dose of medicine of any other kind. A very common reason for preferring a powder to other kinds of medicine is persistent vomiting; and it is found that powders will remain on the stomach at times when it rejects everything else. Again, some persons—either from fancy, or possibly from some real disease of the throat—are unable to swallow particles of any size, and then the administration of powders becomes imperative. Children, as of course is well known, obstinately refuse to take medicine of any kind, and the wisdom of our ancestors has demonstrated that powders are of all things the most difficult to reject from the mouth.

In administering powders it should be borne in mind that the act of swallowing is mainly an involuntary one, and that if the materials to be swallowed be placed far enough back in the throat they must continue their journey to the stomach whether the patient desire it or not. Powders therefore should be placed quite upon the back of the tongue, beyond what are technically known as the pillars of the fauces—*i.e.* the two bands which, on looking into the mouth, may be seen stretching from the uvula to the tongue on either side. The horrible instrument of torture which formerly was regarded as a household requisite, but which happily is becoming daily more and more rare—we mean the *physic spoon*—was constructed on purpose for the administration of powders. It consisted of a spoon with a lid and a hollow handle, and it was only necessary to introduce the spoon into the mouth—into which it exactly fitted—when, on blowing down the handle of the spoon—the contents of it were left safely adhering to the back of the throat, whence all efforts to dislodge them proved almost absolutely futile. Powders are happily nowadays not often so bulky as formerly was the case, and it is seldom necessary to employ for their administration the formidable engine we have described.

When a powder is given, it is advisable to place it upon the point of a spatula or the handle of a spoon, which should then be passed quite to the back of the throat and inverted. If the patient is unconscious or only semi-conscious this is all that is necessary, and the powder may be left to find its own way to the stomach by the acts of swallowing which the presence of the powder in the back of the throat will assuredly set up. If the patient is conscious and in a state to assist in the curative measures which are being adopted for him, it is a good plan to give a drink of water or some other unforbidden liquid in order to wash it down; and of course the sooner the powder reaches its destination the sooner will the effect which it is desired to produce with it be brought about. Powders may be stirred up with water or any other liquid, which the patient then drinks "dregs and all;" in this way the powders of ergot, which it is customary to give to lying-in women, are administered.

It is usual, of course, in the case of children to mask the presence of the powder by giving it in a spoonful of treacle or preserve; this is a manœuvre, however, upon which it will scarcely be necessary for us to dwell.

TABLOIDS have of late almost entirely superseded both pills and powders. They contain the exact dose required, there is no possibility of taking an over-dose, and they are easily swallowed. In the case of nauseous drugs they are coated or varnished so that they are absolutely free from taste.

RECTAL ADMINISTRATION.—In cases in which it is not possible to give medicine of any kind by the stomach, it becomes necessary to give drugs in some other way; and, happily, we have other methods at our disposal for administering them.

The most common channel of administration in these cases is the rectum or bowel, into which we may put injections, or enemata.

ENEMATA, or injections, are of several kinds, and vary in nature according to the purpose for which they are intended.

If it is wished to influence the whole system by medicines inserted into the bowel, the injection must not be too bulky or it will not be retained, and the object for which it is administered will be defeated. One of the medicines so administered is opium, and there is no more effectual way of stopping diarrhœa than by injections of starch and laudanum. These injections should not exceed two or three ounces, or, at most, four ounces in size; the starch or arrowroot, having been made in the ordinary way, ought to be allowed to get quite cold, and should then be of such consistence that it may be passed with ease through an ordinary glass syringe. A large syringe with a soft vulcanite tube is often used for giving enemata of this kind, but care must be taken to ascertain that the nozzle is thoroughly rounded at the end and not in the least jagged. The laudanum must be very carefully and thoroughly mixed with the starch, and—the nozzle of the syringe having been introduced with the utmost gentleness into the bowel—the process of injecting must be accomplished as slowly as possible. The points to be borne in mind with regard to enemata intended to control the action of the intestines or produce sleep, are:—(1) that they must be small in quantity; (2) that they must be cold; and (3) that they must be very slowly injected.

The most common reason for giving an enema is to open the bowels. A simple injection of water, either tepid or cold, is habitually used by many persons, and especially on the Continent, for this purpose. This simple injection—or *enema simplex,* as it is technically called—may consist either of pure water, or more commonly of soap and water or gruel. Soft soap is usually considered the best for making this enema. Enough soap should be rubbed down in two pints of hot water to render it creamy, by which time the water will be about the right temperature. The nurse must be careful to fill the syringe before introducing the tube, otherwise air is forced into the bowel before the enema is injected.

Before introducing the nozzle of the syringe into the bowel it should be oiled. It must be inserted with the utmost gentleness, and the direction which the bowel takes should be ever present in the mind of the administrator. As the patient lies on his left side—the position which is generally recommended—the direction of the bowel is towards the left hip-bone of the patient. Patients are often hurt by the injudicious attempts of the nurse to forcibly pass the syringe in the wrong direction—that is, directly upwards in the middle line of the body. It is important to remember these directions, because it often happens that the patient is too insensible to guide the nurse by his own sensations. It is usually sufficient merely to insert the nozzle of the syringe just so far that the enema after injection is securely retained; in rarer cases, however, it is deemed necessary to pass a long tube a great way up the bowel. This is a manœuvre that demands some care and experience, and unless the nurse is well assured that she possesses these in a sufficient degree, it had better be left to the medical practitioner to perform.

If the patient cannot be placed upon his side, he may lie upon his back with one leg raised, but the direction of the syringe must still be towards the left hip-bone.

A variety of syringes have been devised for the administration of injections, but the purchaser should be careful to select one of simple construction. Those made entirely of india-rubber in which the pump consists of an air-ball with a simple suction-tube and injection-tube, are the best. They are cheap, a consideration which is always of importance; they are portable, and but little liable to get out of order; the amount which can be injected through them is in no way limited by the size of the instrument, but any quantity can be sucked from a basin and thrown up the bowel.

An injection should always be slowly administered, and care is necessary to avoid getting air into the machine. To avoid getting air bubbles mixed with the enema, the nurse must carefully watch that the end of the suction-tube is never above the level of the liquid in the basin.

To induce a purgative action it is advisable to inject a pint or a pint and a half of liquid. When the enema is only in part administered it is not uncommon for the patient to cry out and express a wish to evacuate the bowel, but to this the nurse should pay no attention, unless it be to discontinue the administration for a few moments. The injection must then be slowly continued till the whole quantity has been given, when, after a brief interval, the tube must be slowly withdrawn. The patient should then be directed to retain the injection until he feels that he can do so no longer, and then when it is ultimately passed, it will be found that a copious evacuation will follow. When giving an enema it is very important to exercise every care that the patient and the bed are neither of them soiled or left in a damp state after the process. A mackintosh sheet ought always to be placed under the patient's body before operations are commenced.

If it is desired to produce a very strong purgative action, it is usual to introduce some purgative drug into the injection mixture: common olive or salad oil is given not only on account of its slight purgative action, but because it also serves to soften any old and hard accumulations of fæcal matter that may happen to be in the intestines. Castor-oil may be substituted for common oil, so that a more powerful purgative action may be produced. It is usual to mix about an ounce of castor oil with the gruel or other fluid of which the bulk of the injection is constituted.

The injection of turpentine is a powerfully purgative enema. It is made with one ounce of turpentine in three-quarters of an ounce of starch.

NUTRITIVE ENEMATA.—In cases where it is impossible to put any food into the stomach, it becomes necessary to feed a patient by the bowel. Nutritive enemata should not be so bulky as purgative enemata. It is absolutely necessary that the food which it is sought to introduce in this way into the system should be of an absolutely bland nature, and in no way irritating, or a purgative action will be set up, and the object of the injection defeated. Milk may be given in this way, and it may either be given alone or it may be made the groundwork, foundation, or vehicle, as it is technically called, for other matters. To the milk may be added strong beef tea or extract of meat. The following is a good formula:—Half an ounce of beef tea, half an ounce of brandy, the yolk of an egg, and a tea-spoonful of raw arrowroot—given at intervals of one or two hours. The arrowroot helps to retain the enema in the bowel. The whole should be pumped up very slowly, so as to avoid any action of the bowels, which might cause it to return. It is almost needless to add that the beef tea or other food used for these purposes must contain neither salt, pepper, nor any flavouring of an irritating kind.

Enemata in which the food is predigested by pepsin, zymine or some similar agent are now extensively used and have many advantages over the ordinary nutritive injections.

Digested nutritive enemata are thus prepared:—The mixture of milk, beef tea, or eggs, having been put in a jar provided with a lid, must be placed in a warm situation at a temperature of about 100 degrees Fahrenheit. If the jar be put in the fender, or on the hob, not too close to the fire, these conditions will be about fulfilled. To the jar must then be added ten grains of pepsin. Pepsin is the active principle of the gastric juice, and is artificially prepared for commercial purposes from the stomach of the calf or pig. In addition to the pepsin must be added hydrochloric acid, in the proportion of ten drops of the dilute acid to each half-pint of the liquid. The mixture of food, pepsin, and acid must be allowed to stand for an hour, at the end of which time the acidity of the liquid—which would prove too irritating for the bowels—must be neutralised by the addition of a small quantity of carbonate of soda, which must be slowly added and thoroughly mixed with the food till effervescence ceases. It is probable that a carefully-prepared fluid of this kind would prove far more nourishing to the invalid than enemata which have not been previously subjected to this process of artificial digestion.

After the administration of nutritive enemata, the patient should be directed to remain quiet, so that there may be no risk of the food remaining in the intestine too short a time for the assimilation of as much of the food as can be absorbed.

A suppository is a dose of medicine made up in a solid form, and of such a shape—like a conical bolus—that it can be easily introduced into the bowel. The introduction of a suppository is never a matter of any difficulty. The medicines which are used in this way are usually of a narcotic or astringent nature.

HYPODERMIC INJECTIONS.—Another way of administering medicine is by injection under the skin. There can be no doubt that this method is one of the most important discoveries of modern medicine; at the same time, it must be borne in mind, that since only the strongest solutions of the most powerful drugs are given in this way, the process is never lightly to be had recourse to, and must be adopted only on the recommendation of a medical man.

The hypodermic syringe is a small glass syringe constructed to hold only a few drops of liquid, and terminating in a hollow needle, through which the fluid is injected: the piston works sometimes with a screw, and sometimes by simple pressure. To use it one must be, in the first place, thoroughly certain of the strength of the solution to be employed. The next point is to fill the syringe with the exact amount required, and no more; this is easily done with due care, as the syringe is always plainly and carefully graduated. The syringe being charged, the process of injection is not difficult: it is only necessary to pinch up a piece of the skin between the thumb and forefinger of the left hand, and then push the sharp needle-point of the syringe completely beneath the skin; then, as the piston is depressed, a few drops of fluid will be seen to flow from it. The point of the syringe must be allowed to remain *in situ* for a few moments, and then, as it is very gently withdrawn, the pad of the right fore-finger must be placed upon the minute puncture, to prevent the escape of the injected fluid.

As to the place for making these injections under the skin, we may say that the spot selected is of small consequence, as wherever this may be, the effect produced is not local, but upon the whole system. It is generally best to choose a spot which is not very sensitive, as the skin of the back, or the back part of the arm.

LOTIONS.—Having discussed the various forms of medicine intended for internal administration, we may now pass on to consider those which are for external use.

It is often advisable to keep a part cold or hot. If cold is required, the usual plan is to apply either cold water, ice, or evaporating lotion. Cold water is applied by simply moistening pieces of lint or linen rag, and laying them on the part. It must be borne in mind that the process of evaporation, even of water, is a powerful cause of cold, and, therefore, these applications must never be covered up, but be left exposed, so as to encourage evaporation in every way. In applying moist applications to a part, care must be taken that no moisture escapes into the bed, or the patient will get chilled: the rags must be wrung out sufficiently dry to avoid this.

Evaporating lotions are merely water to which a certain amount of spirit has been added, so as to increase the rapidity of evaporation, and so enhance the degree of cold. These lotions must never be applied to a part the skin of which is broken.

They are generally made with methylated spirits of wine, but any spirit answers the purpose perfectly well. It is a common custom to make these lotions with ordinary gin.

Evaporating lotions must be kept constantly wet, or they very soon get dry and hot, and then only serve to keep the part rather warmer than if they were dispensed with altogether.

Occasionally an apparatus, known as an irrigator, is employed to keep a part constantly moist and cool. Thus, let us suppose that we wish to keep a bruised leg constantly cool, we may do so by suspending to the bed-cradle a wide-mouthed bottle filled with water, or any other liquid that may be thought advisable; a woollen thread or a few pieces of cotton, twisted together like the wick of a lamp, must then be placed in the bottle, with one end out and hanging just over the bruised part of the leg, which we must keep covered with a piece of rag. The capillary force of the threads will serve to draw the fluid gradually out of the bottle, and it will fall on the rag in a succession of drips, which will keep the rag constantly moist; and the rate of evaporation being nearly uniform, the degree of cold will be nearly uniform also. When employing irrigation it is doubly necessary to protect the bed from getting damp. When using cold to a part, it is very necessary to keep it persistently applied, because, as is well known, the moment the application ceases, reaction sets in, and in a short time the part glows with warmth.

ICE BAGS.—When ice is used for the maintenance of cold—which is occasionally done to the head and spine—it is necessary to enclose the ice in a bladder, or some water-proof bag. An ordinary sponge-bag answers the purpose perfectly well.

Bags have been designed for the application of ice to the spine, but a nurse of ordinary intelligence will have little difficulty in extemporising something which will fulfil the necessary requirements nearly as well as a patent spinal ice-bag.

FOMENTATIONS.—The warm applications which the nurse will have to use are of two chief kinds, viz., fomentations and poultices.

To make a fomentation three things are required—boiling water, flannel, and a wringer. Of these requisites the last only needs a few words of explanation. A wringer is made of a piece of strong coarse calico about three-quarters of a yard long, and a foot and a half wide. It must be double, the edges must be firmly stitched, and at either end a loop must be left large enough to admit a piece of broom-stick a little longer than the width of the stuff. When a fomentation is to be made, first prepare the wringer by fitting the handles into the calico, then lay the calico across the basin with the handles hanging over the edge; place the flannel on the wringer, and then add the boiling water from a kettle. When the flannel is thoroughly soaked through, proceed to wring it out by means of the wringer. Take hold of it by the wooden handles, raise the boiling-hot flannel out of the basin, and then by twisting the handles in opposite directions the flannel will be wrapped in the calico, and the exertion of a very moderate amount of screwing power upon the handles will serve to wring the fomentation absolutely dry without scalding the fingers. Before a fomentation is applied to the skin, care must be taken to ascertain that it is not so hot as to be likely to scald the patient, but short of this a fomentation can hardly be too hot, and a good nurse will show her skill by the rapidity with which she can prepare a fomentation and get it applied before it has had time to get cooled.

While applying fomentations to young children, the nurse should be especially careful that they are not too hot, because the tender skin of a child is very easily scalded, and they are more at the mercy of a nurse than are adult patients.

After a fomentation has been applied, it must be immediately covered with some waterproof material to prevent evaporation, or else the rate of cooling will be so quick that the object of a fomentation—continued warmth and moisture—will not be gained. It is sometimes necessary to retain a fomentation *in situ* by a few turns of a bandage.

Occasionally it is recommended to add some drug to the fomentation, but it is doubtful if remedies applied in this way are of much service. It is common in cases where the patient is suffering much pain to sprinkle a few drops of laudanum on the flannel.

Fomentations need to be repeated at regular intervals, and the nurse must be careful to have the new fomentation in readiness before the old one is removed. When a fomentation is changed, the skin should be thoroughly wiped dry with a towel before the new one is applied; if this is not attended to, any part which may have been moistened, and which might not be covered by the new fomentation, is liable to get unduly chilled.

Many special fabrics have been made for the application of fomentations, the best known of which is probably the so-called *Spongio Piline.* This is certainly a very convenient and neat material, but when using it, it is advisable to cover it with a piece of oil-skin or other waterproof fabric to prevent evaporation from its thick edges.

POULTICES are either very useful and agreeable applications, or quite the reverse, according to the skill with which they are made.

When we speak of a poultice we usually mean a linseed poultice, which is made in the following manner:—

To make a linseed meal poultice, the vessel in which it is to be made should first be warmed; then boiling water poured in, according to the size of the poultice required. Practice alone will enable the nurse to judge the quantity correctly. The water should be sharply stirred with the hand while the meal is dropped in with the other, care being taken to stir only one way. After a poultice has been mixed to a proper consistence, the next thing is to spread it evenly on a piece of old soft linen rag. This is perhaps the most difficult part of making a poultice, as it must be of the same thickness throughout, and not in the least lumpy, or else portions of the linseed are apt to fall away from the rest and get into the bed. If the poultice is for an open wound, care must be taken that no threads are left on the rag on which the poultice is laid that can possibly get into it. A margin of rag should be left all round the poultice, which should be first doubled back on itself, and then over the edge of the poultice.

Although we speak of rag as being useful for the manufacture of poultices, it is important to make sure that all rags employed for such a purpose are absolutely clean.

For the satisfactory spreading of a poultice, a long thin knife, or spatula, a blunt knife, not unlike an artist's palette knife on a large scale, is needed.

After a poultice has been applied, it is necessary to cover it with waterproof or oil-silk, in order to prevent drying and cooling.

The following are the directions for making charcoal poultices:— Take of wood charcoal, half an ounce; bread, two ounces; linseed meal, an ounce and a half; boiling water, half a pint. Soak the bread in the water near the fire, add the meal and half the charcoal, stirring to a soft poultice, sprinkling the remainder of the charcoal on the surface.

Charcoal poultices are useful in cases in which the nurse has to deal with foul wounds, as they have great deodorising power.

The yeast poultice is employed for very much the same purposes as the charcoal poultice, and is made as follows:—Take of beer yeast, six parts; flour, fourteen parts; water, at a temperature of 100° Fahrenheit, six parts. Mix; place the mass near the fire till it rises.

It is important to bear in mind that the yeast poultice differs from the others in this, that the water employed to make it must not be boiling, or the fermentative action will be arrested, and the mixture will not rise.

The last poultice which we need mention is the chlorinated soda poultice, which is made thus:—Take of solution of chlorinated soda, one part; linseed meal, two parts; boiling water, four parts; add the linseed meal gradually to the water, stirring constantly; then mix with the solution of chlorinated soda.

When a poultice is to be applied, the nurse should get her patient ready first. If he has a wound, it should be thoroughly washed and lightly covered; then the poultice should be made quickly, and applied as warm as the patient can bear it. The bad habit of making the poultice first, and keeping it warm at the fire while the patient is prepared should be carefully avoided, as by this means the water evaporates, and instead of a poultice a hard dry cake is formed. In all cases of poulticing or dressing wounds everything required should be got ready before the patient is touched. Uncover, wash, and cover again as rapidly as is consistent with careful dressing. Nurses sometimes first remove all the dressings, then go for the water and other materials, causing much unnecessary pain to the patient by the delay. A good nurse will spare her patient every possible delay, fatigue, or excitement which it is in her power to avert from him. She should move quickly as well as quietly.

BLISTERS.—We may now proceed to discuss another class of external applications, viz., those of a stimulating or counter-irritating nature. The essential principle of all blistering applications is the *cantharis vesicatoria,* or blistering fly.

Before applying a blister the skin should be thoroughly washed, so as to remove from it every particle of grease, which seriously interferes with the action of the blister.

If one of the blistering fluids is used, it is only necessary to paint the part for a few minutes with the fluid by means of a camel's-hair brush, and then to be careful that none of the fluid is washed or rubbed off before the part is thoroughly dry. If a blistering plaster is employed, this must first be cut to the exact size required. Sometimes, when the patient's skin is very sensitive, and also for the purpose of avoiding any constitutional action from the blister, a piece of oiled tissue paper or very thin silk is placed between the plaster and the skin. In France, powdered camphor is sprinkled on the blister for the same purpose.

It is often asked by patients—"How long am I to keep this blister on?" To this it is obviously impossible to return an exact answer couched in terms of time, but we may always reply—"Keep it on until a blister is raised." This is, of course, a variable period depending on the quality of the blister, the part of the skin to which it is applied, and the degree of irritability of the skin of the patient on whom it is to be applied—facts which can only be learnt by experience. The blister may be removed for a short time for the sake of ascertaining how matters are going on, and if no signs of the desired effect are observable, it must be replaced. If the blister be a good one, and the skin be clean, about twenty minutes or half an hour is generally sufficient to raise a considerable blister.

After the blister has been raised, the next difficulty is to know what to do with it. As a general rule, we should say do nothing, but if the bladders of fluid be inconveniently large, they may be snipped with a pair of scissors, to let out the fluid. If it be thought advisable to keep up the action of the blister, the discharge from the blistered surface may be encouraged by the application of poultices or warm water dressings to the part. If, on the other hand, it is not desired to keep up the action, the raw surface must be carefully protected from injury or irritation, and the healing process may be encouraged by the application of some bland ointment to the part, such as cold cream or spermaceti ointment, which, for this purpose, must be spread upon a thin piece of soft rag.

PLASTERS.—The mustard plaster is a domestic remedy of such respectable antiquity, and of such acknowledged efficacy, that it is almost superfluous to say anything about it. The directions given in the Pharmacopœia for making the mustard poultice are as follows:—

Take of mustard in powder two and a half parts; linseed meal, two and a half parts; boiling water, ten parts. Mix the linseed meal with the water, and add the mustard, constantly stirring.

The method employed in most households is far more rough and ready than this, and consists of spreading the contents of the mustard-pot on a piece of brown paper. As table mustard is always diluted with the admixture of a certain proportion of wheaten flour, the strength is not very different from that ordered by the Pharmacopœia.

For the sake of cleanliness, as well as to avoid the possibility of blistering the skin by the accidental adhesion to the skin of portions of mustard, it is generally advisable to place a piece of muslin between the skin and the plaster.

It is not uncommon to hear persons speak of mustard blisters, but this is a wrongful application of the word blister, since it is only in very exceptional circumstances that a mustard plaster exerts any blistering action; and when it does this is due either to the great tenderness of the skin, or to the mustard having been left on too long.

Thanks to the ingenuity of a French chemist, M. Rigollot, we have a form of mustard plaster at our disposal which is so cleanly and convenient that it threatens to displace the old-fashioned forms of plaster. Rigollot's leaves are always ready at a moment's notice, and can be cut exactly to any size required.

Another form of mustard plaster is sold under the name of "Sinapine Tissue;" but the efficacy of many of these tissues is due to cayenne pepper rather than to mustard, so that we cannot so confidently recommend them.

The following is a good formula for mustard paper:—Black mustard in powder, ninety grains; solution of gutta-percha, as much as will give it a semi-fluid consistence, and let it be spread with a suitable brush on one side of a stiff piece of paper, four inches square, and allow it to dry. Before applying it to the skin it should be dipped in warm water for fifteen seconds. The solution of gutta-percha is made thus:—Steep thin gutta-percha in eight times its weight of chloroform until dissolved; mix one part of carbonate of lead with two parts of chloroform; add this to the solution, and shake frequently, and let it stand for ten days, or until the precipitate falls, then pour off the clear liquid for use.

In making mustard poultices for children, they should be diluted with linseed meal, or the skin may be blistered.

We ought, perhaps, to say a few words on the use of ordinary *sticking plaster,* concerning which there is often much misapprehension. Sticking plaster is used solely for its mechanical properties, and has no healing power of any kind; in fact, the reverse rather holds good, for its undoubted utility as a mechanical support is to some extent counterbalanced by the sticky and dirty condition in which the parts are left after the plaster has been removed. Sticking plaster ought never to be put upon a raw surface; and although it is of great use for holding the edges of a wound together, care should be taken that the attachments of the plaster are well beyond the margins of the wound. After plaster has been used for any purpose, whether for holding the edges of a wound in contact or for attaching a blister, poultice, or other dressing to the surface of the body, care should be taken to see that the skin is thoroughly cleansed from all adhering particles of the adhesive material of which the plaster is composed. This may be done by gently rubbing the part with olive oil or turpentine, which dissolves the plaster. After using turpentine the skin must be carefully washed with soap and water, or blistering may result.

The same remarks apply to other kinds of plasters which are used for many different purposes. To this class belong the "Poor Man's Plasters," strengthening plasters, and the like, which are worn for long periods on the body as protections against cold, to relieve internal pains, and to afford support to parts, such as the back, which may have become weakened from any cause. These plasters are often worn for too long periods at the great risk of setting up irritation of the skin beneath them.

STUPES are fomentations to which some stimulating liquid has been added. The turpentine stupe is the one in most general use, and it is easily prepared. Make a hot fomentation in the ordinary way, and when it is quite ready sprinkle over the surface a table-spoonful of turpentine, and apply it to the part while it is still hot. If turpentine is too stimulating, camphor may be substituted, and this may be done either by sprinkling on some powdered camphor, or adding a few drachms of spirits of camphor, which will answer the same purpose. Stupes are invaluable applications in cases of bronchitis with difficulty of breathing, and for cases of colic of the bowels, in which they give speedy relief.

LINIMENTS are used for two reasons—to give relief from pain, and to act as a stimulant and quicken the nutritive activity of a part.

Stimulating liniments are useful in proportion to the ability and thoroughness with which they are applied. Any liquid will act as a stimulant provided it be applied to the part with sufficient friction, and many persons are in the habit of ordering liniments because they wish to insure that the part shall be properly rubbed. Rubbing is undoubtedly one of the most valuable curative means at our disposal; but in order that it may be as useful as it can be, it must be carried out with a good deal of patience and method. One object of rubbing is to make the skin red, and this is only a matter of rapidity and hardness. A bad rubber will make the skin sore as well as red, and thus great harm is done, because it is impossible to apply a liniment, or even to rub a second time, on a sore place. Thus excess of zeal may deprive the patient of his necessary treatment.

Some liniments are of so stimulating a nature that no friction is required to enhance their effect; of such a nature are the liniments of mustard and croton oil, and, indeed, in applying the latter the nurse must be careful not to allow any of the stimulating fluid to adhere to her fingers, or they will be made sore. When applying croton-oil liniment it is advisable to protect the hand with a glove, or to use a piece of rag to rub with, and it is also necessary to remember to wash the hand with soap and water afterwards.

When using a liniment which requires to be rubbed in with some force, as when applying soap liniment to a limb the seat of paralysis, a large quantity of the liniment must be taken in the hand, and be applied to the limb; the rubbing must be effected steadily, and with considerable deep pressure, and, as a rule, in a direction towards the trunk of the body. Rubbing of this kind, if skilfully done, takes the place of exercise to a great extent, and serves to drain the disused muscles and other tissues of the effete materials which accumulate in them, owing to their forced inactivity. The main use of the liniment in these cases is to grease the surface of the limb, and prevent rough friction, otherwise the surface of the skin would very soon be rubbed off.

There are one or two so-called liniments, which would be better designated pigments, for example, the liniment of iodine, which is merely painted on the part with a camel's hair pencil; and the liniment of aconite, which, when used pure, is applied in the same way.

LEECHES.—Leeches are not prescribed nowadays so frequently as they were formerly, but they are still occasionally employed, especially in cases of inflammation of the eye. They are not very attractive animals, and are apt to give trouble, especially to the inexperienced; but a nurse should know how to handle them.

It is often difficult to get a leech to bite, and the most common cause of such refusal is that the skin of the patient has not been properly cleansed before applying the leech. It is recommended that, if the leech persistently refuses to bite, the skin should be moistened with a little milk, cream, or sugar and water. When applying leeches they should be held delicately by the tail, but care must be taken not to bruise them. Special tubes of glass called leech-glasses are sold, into which the leeches are to be placed when applying them, but care is requisite, or the wrong end of the leech may be put into the bottom of the tube. The leech is very similar at both ends, but the mouth is known by its presenting an appearance of three rays.

A leech when in health is able to extract about a fluid drachm of blood. If it be thought desirable to encourage the flow of blood, this may be done by applying poultices or hot fomentations to the part, and bleeding may be kept up for some time from a leech-bite in this way. It occasionally happens, on the other hand, that the bleeding from a leech-bite is too profuse, and this may even go to the extent of endangering life, for there is nothing in which individuals show a wider difference than in the disposition to bleed. The best way to check excessive bleeding is to apply pressure to the part by means of a compress made of lint. If this does not serve, it is recommended to apply a matico leaf, or to touch the part with caustic. Cases are recorded in which it has been necessary to bring the edges of the bite together with a stitch.

COOLING DRINKS.—A nurse should have a good practical knowledge of invalid cooking, and should above all know how to prepare a variety of cooling drinks, which will be grateful to the parched tongues of convalescents. The following formulæ are well worth a trial:—

Lemonade.

Grate the rind of four large lemons and mix with it one pound of sugar. Squeeze the juice of the four lemons and pour over the sugar. Put all in a glass jar. Allow one tablespoon for each glass of iced water.

Lemonade with Eggs.

Pour one pint of cold water over three-fourths of a pound of sugar, and add to it the juice of five lemons. Beat the yolks of three eggs until light, then beat the whites to a stiff froth, and add the yolks and whites together. Pour a cup and a half of cracked ice into the lemonade, then stir in the eggs and serve.

Iced Tea.

In the morning when you have a fire put as many tea-spoonfuls of tea in an earthen teapot as you have persons to use the beverage, and always allow one or two tea-spoons extra. Pour over it fresh boiled water and set it back of the stove, where it will steep, but never boil. In ten or fifteen minutes drain off in a jug, and when cold put in the ice box. Serve in tumblers, with a slice of lemon.

Tea "à la Russe."

Peel a juicy lemon and slice in thin slices, taking out the seeds, put one slice in each teacup and sprinkle the lemon with sugar, pour hot tea over it. It should be served without cream.

"Raspberry Sharp."

Fill a two-quart glass jar with fresh red raspberries; pour over them cider vinegar until the jar is full. Screw the cover on and let them stand one week, then scald and pour in a jelly bag and let it drain; to the juice add one pound of loaf sugar to every pint. Boil fast twenty minutes and skim when any scum arises; while hot put in six bottles or glass jars. One spoonful in a glass of iced water makes a drink of delicious flavour.

Blackberry Cordial.

This home-made drink is very valuable in hot weather as a preventive of diarrhœa. Squeeze enough blackberries to make a quart of juice, add to it a pound of loaf sugar and let it dissolve, heating it slowly. Add to it one tea-spoonful of cloves, cinnamon, and nutmeg. Boil all together for twenty minutes. On removing from the fire add a wine-glass of brandy. Put in bottles while hot and seal. Use a tea-spoonful for a glass of iced water.

Cream Soda.

Boil together for a few minutes, three pints of water and two pounds of white sugar, juice of two lemons, and two ounces of tartaric acid. Set it away to cool. Beat the whites of three eggs to a stiff froth; slowly sift it in a half cup of flour and stir until smooth, then flavour with half an ounce of wintergreen essence. When the syrup is nearly cool stir in the eggs. When cold put it in a stone jug which has been scalded until perfectly sweet. Cork tightly and keep in a cold place. For a drink use two table-spoonfuls of this syrup in one glass of water, and just before drinking add a quarter tea-spoonful of soda and stir well.

TEMPERATURE.—Every nurse must cultivate her powers of observation, and must learn to be absolutely accurate in her reports. One of the most important duties she has to perform is taking the patient's temperature. This function naturally devolves on her, and in cases of acute disease much will depend on the accuracy with which this is done. The method adopted is perfectly simple, and the whole process can be learnt by a person of average intelligence in a couple of hours. The whole subject has been fully discussed in the article devoted to Clinical Thermometry (Vol. I., p. 155), which should be carefully studied by the nurse.

THE PULSE.—A nurse should also be able to "take a pulse." This is done by placing the forefinger on the blood-vessel which may be felt at the wrist, on the outer side, just above the junction of the thumb with the wrist-joint. While the pulse is being counted, the patient should be in a recumbent position, with the arm on which the pulse is being counted in a state of absolute repose. The finger should then be placed quietly on the pulse, the attention of the patient being attracted thereto as little as possible, since the pulse is very easily altered by slight emotional causes. The pulse may very well be taken while the thermometer is in position. The pulse should be counted for at least a minute by the seconds hand of an ordinary watch.

In old days, before watches were provided with seconds hands, it was usual to compare the pulse of the invalid with that of some other person known to be healthy. Thus, in Pepys' "Diary," we find it recorded:—"October 19th, 1663. Coming to St. James's, I hear that the queen did sleep five hours pretty well to-night, and that she waked and gargled her throat, and to sleep again; but that her pulse beats fast, beating twenty to the king's or my Lady Suffolk's eleven. It seems she was so ill as to be shaved and pidgeons put to her feet, and to have the Extreme Unction given her by the priests, who were so long about it that the doctors were angry. . . . The king, they all say, is most fondly disconsolate for her, and weeps by her, which makes her weep; which one this day told me he reckons a good sign, for that it carries away some rheume from the head." This gives an interesting and amusing idea of medical practice in the time of the merry monarch; and from it we may gather that if his majesty's pulse were not quickened, the queen's beat about one hundred and thirty in the minute.

Directly the pulse has been taken it should be recorded with as little delay as possible.

THE BREATHING.—A record of the rate of respiration is in many cases of scarcely less importance than that of the pulse. It is best taken by laying the hand quietly, and without attracting the patient's attention to the fact, upon the stomach if the patient be a man, and upon the upper part of the chest if a woman, and then simply counting the number of times the chest or abdomen heaves in a minute.

The respirations should be taken at the same time as the pulse, and these two records must be entered on the same page with the temperature. The pulse and respirations bear in health a definite proportion to each other, and it will be found that for every respiratory movement there are four beats of the pulse. Any marked departure from this ratio is to be taken as an indication of disease. It will be readily understood that if a portion of one or of both lungs be from any cause *hors de combat*, that the healthy part remaining will have to work all the harder, and it is in such cases as these that we find a quickening of the ratio which respiration bears to pulse, and instead of its being one to four, it may rise as high as one to three or one to two.

COUGH.—The amount of cough is another matter which a nurse ought carefully to notice, and not only the amount but the manner of coughing also. Thus a cough may be violent or hacking, tight or loose, accompanied by expectoration or otherwise, and these points are all to be carefully noted. The fact that a patient who has not previously coughed has been heard to cough only once or twice during the night may be a fact of the greatest importance. The character of the expectoration—supposing some untoward circumstance has interfered with its being kept, as it always ought to be, for the inspection of the physician—is always to be noted. Was there any blood in it? How much was there? Was it watery or thick? Was it yellow or rusty-coloured? Was it very sticky and tenacious? Did it smell strongly? These are questions which a nurse may expect to have put to her on this point, and to which she should always be ready to give a prompt and satisfactory reply.

THE SKIN.—Perspiration is another point to which the nurse's attention must be directed. The amount, the time, the part of the body upon which it appears most thickly, and any peculiarity of odour, are all to be noted.

SLEEP.—The amount of sleep also is a matter upon which the medical attendant wishes to be accurately informed. The best plan is to note down the hours of sleeping and waking, and to add any remarks as to the character of the sleep which may seem desirable. Restlessness, wandering, or muttering are to be noted. Grinding of the teeth or snoring are to be noted, especially in the case of children.

CONVULSIONS.—It may happen that a nurse is left alone with a patient during an attack of convulsions, and it is important she should know not only what are her duties during the attack, but what are the points which are to be noted for the information of the doctor. During a fit the chief thing which needs to be done is to keep the patient free from harm if possible. Try to restrain the movements just sufficiently to avoid the bruising of the limbs by being brought in violent contact with hard bodies, such as walls and furniture. The safest spots on which a patient can have a fit is a bed or the floor, and if he be not on the one he should be placed upon the other. The dress should be loosened round the throat and waist, and if there is any tendency to bite the tongue it is a good plan to put a big cork or bung between the teeth. It is not much use to sprinkle water, although this is often done because the bystanders feel that they must be doing something.

FAINTING.—In an ordinary fainting fit the first and most important thing to do is to lay the patient down in an absolutely horizontal position; if this be not done all other restorative measures will be in vain. The dress must be loosened; cold water may be sprinkled on the face, care being taken not to make the patient unnecessarily damp; ammonia may be held to the nostrils, and a small quantity may be given to drink.

In every kind of fit the nurse ought to notice the complexion cf the patient at the time of the seizure, whether natural, or pale, or dusky. The presence or absence of any sudden cry at the first moment of onset is also important. Anything which the patient may say just before or during a fit will often serve to give one a clue to a right appreciation of the true cause. If the patient be convulsed, the mode of onset of the convulsions should be particularly noticed, whether for example, they begin in the arm, or the leg, or the face, and on which side of the body.

DELIRIUM.—Occasionally it is necessary to restrain a patient, owing to the violence of his delirium, and there is a marked difference in the.

tact with which different nurses control patients of this class. First, it is necessary never to be frightened; but to give such a direction as this is, we know, a simple absurdity, since fright is generally a matter which is quite beyond our own control, and no directions of ours will enable a nurse not naturally endowed with nerve to be courageous under trying circumstances. Use, however, is second nature, and since much fear arises from ignorance and misapprehension, it will be found that the nurse with the greatest amount of experience is the most cool and collected in times of excitement. If a patient shows a disposition to be troublesome, he must be managed quietly and firmly. Do not talk to him unnecessarily, and always let him see that you mean to be obeyed. Never argue with a sick man, and least of all with one whose malady is mental. If a patient with delirium tremens, as is very often the case, gets a notion that there are persons in the room with him, or that there are plots against him, much may be done to remove his alarm by quiet demonstration of the real facts of the case. It is one of the characteristics of these patients that "They do fear each bush an officer," and to their diseased imaginations the commonest objects become sources of alarm. If, however, the curtain, or the hanging garment, or whatever it may be that has caused the fear or apprehension, be removed, the patient may become quiet. If, in spite of these demonstrations, his delusions continue unabated, it is best not to talk about them; and if he persist, do not worry him by contradiction. The writer is not one of those who object to restraint of a mechanical kind; on the contrary, he believes that, in cases where it has been necessary to apply it, many lives have been lost by timorous hesitation on the part of the patient's protectors. A straight waistcoat, when properly applied, does not inflict any serious suffering, and it often happens that a patient becomes much more calm after it has been put on than he was before.

THE MOTIONS.—A correct account also of the condition of the patient's bowels, and of the evacuations passed from them, is, as is well known, of the first importance. The number of motions per diem is to be carefully recorded, and, if necessary, each motion must be set aside till it has been seen by the medical attendant.

The colour and consistence of stools is also to be noted. The proper colour is a deep brown. Blackness may arise either from the patient taking some preparation of iron as medicine, and, in rare instances, from the presence of blood in the motion. Pale yellow stools are supposed to show a sluggish action of the liver; the stools of typhoid fever also are pale yellow. The motions of children are often white from the presence in them of curdled milk, which may be taken as an indication of faulty digestion, either from the condition of the stomach or the food. The stools should always be examined for the presence of blood or slimy matter, which is often an indication of inflammation of the bowels.

DISINFECTION.—A nurse should have some elementary knowledge of how to disinfect a sick-room after it has been occupied by a patient suffering from an infectious disease. In country districts the services of a medical officer of health are not always available, and the nurse has to do her best. The following directions will be found useful:—

In addition to thorough cleansing of all wood-work by soft soap and water, to which a little carbolic acid has been added (one pint of the common liquid to three or four gallons of water), and to removal and washing of all fabrics which can be removed, and brushing of the walls, the room should be fumigated for three hours by either sulphurous or nitrous acids. Both of these are believed to be superior to chlorine, especially in small-pox. All doors and windows and the chimney being closed, and curtains taken down, sulphur is put in a metallic dish, a little spirit of wine is poured on it, and it is lighted. The proportion should be one pound of sulphur to every 1,000 cubic feet of space, and in a long room it is best to have the sulphur in two or three places. After three hours the doors and windows should be opened and kept open for twenty-four hours.

Nitrous acid, which has great disinfectant power, is evolved by putting a piece of copper in a glass vessel half filled with nitric acid. Chlorine is generally evolved from pans of chloride of lime, which are moistened with water and exposed. It may be obtained in greater quantity by pouring four parts by weight of strong hydrochloric acid on one part of powdered binoxide of manganese.

PUBLISHERS' NOTE.—*Volume V. of this work containing the two important sections, "First Aid to the Injured" and "The Ladies' Physician," has for greater convenience of reference been indexed separately. Readers should therefore note that the index which follows is for Volumes I. to IV. only.*

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